OPERATIONAL ART AND INTELLIGENCE: WHAT IS THE RELATIONSHIP?

A MONOGRAPH
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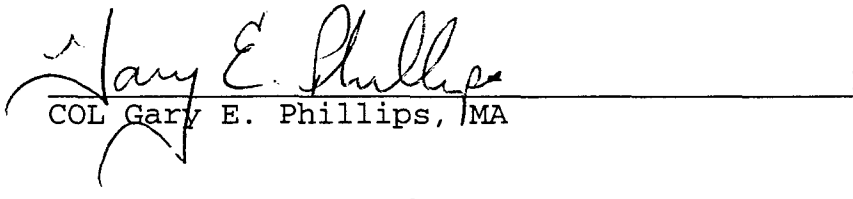

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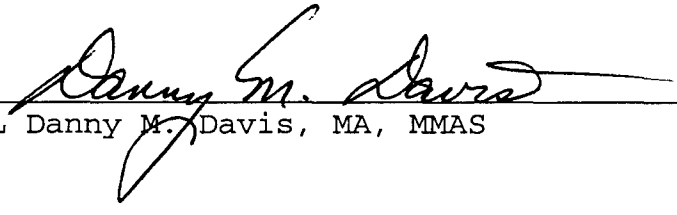

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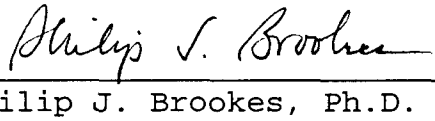

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ABSTRACT

Operational Art and Intelligence: What is the Relationship? by MAJ Robert J. Taylor Jr., USA, 59 pages.

This monograph discusses the role of intelligence in support of operational art. Intelligence support at all levels of war is critical for the commander to successfully apply force to achieve the established goals and objectives. This is particularly true at the operational level where the operational commander must translate strategic objectives into tactical actions. This monograph examines the characteristics and nature of intelligence support to the operational artist.

The monograph first determines the definition of intelligence and its principles and characteristics. Intelligence is defined as information or knowledge of the enemy and environment, both of which are packaged for a specific customer's use in decision making. Furthermore, the principles of intelligence are based on the component parts of knowledge, otherwise identified as the verb know. The principles are detect, recognize, and understand, representing levels of perception higher than the previous. Finally, the characteristics of intelligence are identified as relevant, timely, accurate, and predictive.

Since operational art is rooted in theory, the monograph then briefly discusses the theoretical basis of the terms center of gravity, decisive point, and indirect approach from the standpoint of Carl Von Clausewitz, Antoine Henri Jomini, and Sun Tzu respectively. These concepts provide the basis to discuss operational art, or maneuver warfare.

The monograph defines operational art as the conduct of military activities at the operational level through the translation of strategic objectives into tactical actions. More importantly, the tasks of the operational artist are defined. These tasks are know, plan and execute, and are the basis for intelligence support to the operational artist. Without adequate intelligence, the accomplishment of these tasks would at best be difficult and likely to be costly in blood and treasure.

Operational art requires an extensive intelligence effort. Intelligence at the operational level is defined as information or knowledge of the enemy and environment required by the operational commander to make decisions and to plan and execute campaigns and major operations. The theoretical foundation of operational art provides the same basis for operational intelligence, to determine centers of gravity and their component decisive points as tactical objectives that linked together identify the indirect approach leading to the achievement of the operational and strategic endstate.

Finally, the monograph examines Army and Joint doctrine. It determines that both doctrines adequately describe operational intelligence characteristics and the importance of intelligence to operational success. However, both similarly fail to adequately identify the linkage between operational art and intelligence, particularly concerning military objectives and operational design through the theoretical concepts of center(s) of gravity, decisive points, and the indirect approach.

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Section 1-Introduction

> A commander who boldly determines - without knowledge of the enemy or the battleground - to close with the foe and destroy him wherever he might be, is like a boxer who is in the ring blindfolded.[1]

As the world changes so will the character of war, and it will require continued study by both military and political leaders to ensure they are aware of the potential risks of using military force to achieve political objectives. An essential element of understanding war is the thoughtful awareness of the environment and adversary, or intelligence. The study of intelligence at a particular level of war first requires an understanding of the currently accepted framework of conflict. Likewise, to study any one perspective of war, one must initially consider the whole of war before its components.[2] Whether one is studying, planning or conducting war, it can be viewed from three perspectives, each of which provides a unique picture to the viewer. However, there are no distinct lines separating the perspectives. Awareness that they overlap is critical to the clear understanding of each level. The three perspectives, or levels, are strategy, operations, and tactics.

Starting at the top, the strategic perspective of war provides a view of the nation at war, using its capabilities in coordination to attain national goals by use of force.[3] For our purposes, strategy can be divided into two areas, national strategy and military strategy. National strategic considerations concern the national command authority. Ralph Allen described national strategy as the 'art of the civilian.'[4] Military strategy then becomes the art of generals, where the President is the Commander in Chief (CINC), exercising civilian control of the military as one aspect of national strategy. At the strategic level, military art

is prevalent. TRADOC PAMPHLET 11-9, Blueprint of the Battlefield, defines the strategic level of war as:

> ...the level of war at which a nation or group of nations determines national or alliance security objectives and develops and uses national resources to accomplish those objectives. Activities at this level establish national and alliance military objectives; sequence initiatives; define limits and assess risks for the use of military and other instruments of power; develop global or theater war plans to achieve those objectives; and, provide armed forces and other capabilities in accordance with the strategic plan.[5]

With this as the footing, strategic level objectives are used as the foundation for establishing objectives and assigning missions at lower levels, operational and tactical. Strategic guidance begins the vertical linkage of objectives at each level of war.

At the other end of the spectrum is the tactical perspective. At this level commanders concern themselves with purely military objectives. Typically, tactical commanders destroy enemy forces, seize specific terrain or otherwise apply military force to accomplish the missions prescribed by the operational level.[6] At the tactical level, military science is dominant over military art. Tactical success may simply equate to accomplishing military tasks such as seizing terrain and destroying forces. Again, the Blueprint provides the best definition:

> Tactical level of war is the level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives.[7]

The departure from the quest for the single decisive battle to the maneuver of divisions and corps across a theater of operations spawned the origin of the operational level of war, the focus of this study.[8] This level includes the employment of land, sea, and

air forces that concentrate on attaining strategic objectives.[9] Defined in the Blueprint, this is the level where tactical action is linked to strategic aims:

> Operational level of war is 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 operational objectives, initiating action, and applying resources to bring about and sustain those 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.[10]

The operational level of war then is the essential link between the desired endstate determined at the strategic level and the chaos of war conducted at the tactical level. Operational art "orders" tactical combat. Furthermore, it is at this level where military art and science are evenly applied. As such, the operational perspective may be the most critical to understand, ensuring that national blood and treasure are not expended in tactical battles that fail to lead to the attainment of the strategic goals. Clayton Newell states, "In a general sense, tactical level commanders fight; operational level commanders define where and how to fight, and strategic commanders decide whether or not to fight."[11]

Understanding the levels of war provides a framework for where the operational level fits. It also provides the foundation to begin the study of operational art. Conducting military activities at the operational level, in its most simple sense, is operational art. There is much more to it, but the translation of strategic objectives into a campaign with attainable tactical objectives for available military forces is the underlying core of operational art.[12]

Operational art can be considered synonymous with maneuver warfare. According to Professor James J. Schneider, its evolution occurred at the time of the American Civil War.[13] He explains that previous to this time, the classical strategy of the decisive battle of annihilation was the preferred method. The purpose of maneuver in classical strategy was to achieve maximum concentration through decisive positional advantage at the outset of battle in order to destroy the enemy's army. Technological innovations such as the rifled musket, railroad, telegraph, and the industrial revolution allowing mass production led to the emergence of dispersion on the battlefield and distributed maneuver. Such innovations drove changes in organization, and command and control leading to operational art. Operational art transformed classical strategy into operations distributed in depth across the battlefield where maneuver maximizes freedom of action and destroys the enemy's capacity to wage war.[14]

Operational art, or maneuver warfare, is highly dependent on knowledge of the enemy. For the commander, operational art represents a way of thinking that transcends the tactical level and focuses his attention on the contribution of his plans and actions on the battlefield to the overall strategic objectives of war. The essential element to accomplish this is understanding the enemy. Operational art avoids the classical strategy of head on collisions with major enemy forces. The operational artist seeks to maneuver dispersed, swarm faster than the enemy to create combat power, apply combat power at the decisive point and time against an enemy weakness, then quickly disperse to prepare for the next opportunity.[15] Thus, the application of operational art is highly dependent on intelligence.

Waging war without intelligence is possible, but may be better described as expensive, dangerous and aimless destruction. Conversely, warfare waged with excellent intelligence increases the chances of success exponentially. In this respect, intelligence plays a supportive role, yet supportive is not synonymous with secondary or unimportant. Arguably, intelligence is the most critical support function. It provides, at least in part, a rationale for the employment of major forces by reducing uncertainty in the mind of the commander. Furthermore, critical to the success of any major operation, or campaign, is an intelligence system that provides timely, accurate, and relevant intelligence to the operational commander and subordinate units. This monograph examines the nature and character of operational intelligence and the manner in which it supports operational art. Further, it determines if operational intelligence is adequately addressed in doctrine to support operational art.

The method for this examination is simple. The first task is to adequately define intelligence. In addition to the definition, the characteristics and principles of intelligence will be identified and provide the foundation to examine intelligence at the operational level of war. The second task is to provide the reader with a solid theoretical foundation. A review of Sun Tzu, Clausewitz, and Jomini from an intelligence perspective provides insight into the basis for intelligence as it applies to operational art. The third task involves the examination of operational art in order to determine tasks of the operational artist. These tasks then ascertain the requirements of operational intelligence to support the operational commander. This examination determines the intelligence demands of operational art. The fourth task is to deduce a clear definition of operational intelligence

and the imperatives of intelligence support to the operational artist. Finally, Joint and Army doctrine will be analyzed to determine if intelligence is appropriately addressed to support the operational commander.

Section 2-What is Intelligence?

> So important is information in war that the first paragraph of any operation order or the first part of any oral instructions is devoted to "information of the enemy."[16]

The definitions of intelligence are many and varied. It can be defined by the type of product used to package it, such as an intelligence briefing or estimate. A systems approach defines intelligence as a series of actions, such as collection, processing, analysis, and finally a product. Intelligence has also been used to pigeonhole organizations within the government, such as "intelligence community." Intelligence can also be categorized by how it is used or gathered, such as scientific intelligence or human intelligence, respectively.[17] Regardless of its many definitions, intelligence is information about some one, something, some place, or some activity that was previously unknown.

Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms, has two entries for the definition of intelligence. The first states it is "the product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas." The second entry states that intelligence is "information and knowledge about an adversary obtained through observation, investigation, analysis, or understanding."[18] The first entry identifies intelligence as a product resulting from a systematic process, while the second relates to

information or knowledge. Both definitions are somewhat vague, and leave room for interpretation.

The Army uses the Joint definition of intelligence. As such, it categorizes intelligence based on the corresponding levels of war; strategic, operational, and tactical. The levels of intelligence are explicit to military intelligence, intelligence specifically concerned with military capabilities of foreign countries, or topics affecting potential US or allied military operations relating to numerous areas.[19] Accordingly, the definition of each level tends to illustrate the term "support," followed by a definition of that level of war.[20] The concept of levels of intelligence is of use, but a clear definition of intelligence is imperative to grasp the full significance of it to a decision maker.

Defining intelligence is not a new problem. The 1955 Hoover Commission's Task Force on Intelligence Activities sought "an acceptable definition of intelligence," but learned that each government agency had its own definition to fit their own purposes. They found that many definitions were "lengthy" and "required additional interpretation or delimitation to get at their precise application." What they sought was a definition "as simple and clear as possible," which is exactly what a definition should be.[21] Since then, the definition of intelligence has not been narrowed. The 1990 dictionary of intelligence terms highlights this point with 17 pages and 127 entries for the word, intelligence.[22]

The point of this discussion is to highlight the variety of interpretations for intelligence. For this paper, intelligence is defined as the information or knowledge of the enemy and the environment, both of which are processed and packaged for a specific customer's use in decision making.[23] This study is not the first to consider this angle on

intelligence. LTC Robert Glass, author of Intelligence Is For Commanders, grasped the value of intelligence for decision makers as early as 1948. He states, "To a competent commander, sound and accurate intelligence is a weapon - a supporting 'arm'. When properly understood by a commander, and confidently used, it increases his capabilities for success at all levels."[24]

The first part of the definition identifies the task of intelligence, which is to provide information, or knowledge, of the enemy and environment. Joint Pub 2-0, Joint Doctrine for Intelligence Support to Operations, defines information as "unprocessed data of every description which may be used in the production of intelligence."[25] However, information is more than "any scrap of gossip, or rumor, but *relevant* information" (my emphasis).[26] Intelligence is specific information that the decision maker needs. In this sense, enemy activities are only significant in relation to what one's own forces are doing or are planning to do. Unfortunately, isolated information not taken in context with friendly forces and other pieces of information remain insignificant facts. In intelligence work, such facts do not speak for themselves. Facts, or information, require analysis and interpretation.

Furthermore, the precise intelligence a commander requires will not normally be easy to acquire. The enemy continually attempts to hide information regarding his forces and plans in order to conceal his intent. With this in mind, there will almost always be some information available regarding the opponent, but rarely will every piece of the information puzzle be known. In most cases some facts will be known, pieced together from all kinds of sources, including factual reports, rumors and opinions. Intelligence

then, is a matter of piecing together many different pieces of information to provide an answer.[27] The collation of many pieces determines the completeness of intelligence. Within this context, any one piece of information remains accurate for only a certain period of time. During the time required to execute the intelligence process, some of these pieces cease to be accurate.[28] Because all pieces of information may not be readily available, or some portions outdated and inaccurate, effective intelligence requires interpretation. The analyst managing the intelligence effort requires certain vision, similar to operational art, combining science (facts) with art (interpretation). The success of intelligence in the first part of the definition of intelligence depends on available raw data, identified as facts, and the accurate perception of the collated facts.[29]

The second part of the definition is the most important, and specifically deals with the purpose of intelligence. The purpose being to help the commander make a decision and thereby proceed more accurately and confidently with the accomplishment of the mission.[30] Furthermore, the ultimate objective of intelligence is to enable the decision maker to choose the optimal action. The individual which has to decide on action needs information about his opponent, information likely to be vital in prompting decisions. This vital information may suggest that action should be taken on a scale larger or smaller than originally planned, or even that a completely different course of action would be better to pursue.[31]

With this in mind, how does information aid the leader in making decisions? In warfare, ambiguous situations tend to be the rule . In many cases, there are severe gaps in available intelligence holdings. These gaps generate uncertainty in the mind of a leader

regarding pending actions. A leader's uncertainty typically entails lack of knowledge concerning a particular aspect of the environment or the threat that is critical to attain a specific end. Relevant information aids the decision maker by answering particular questions. Timely, accurate intelligence, properly applied can significantly reduce uncertainty, but rarely can intelligence eliminate it entirely. Reducing uncertainty enables leaders to improve the timelines and quality of their decisions, develop more effective plans, and ultimately conduct more successful operations.[32]

Knowing and understanding the definition of intelligence may not be enough to proceed. The principles and characteristics of intelligence also need clarification. Principles are determined from the requirement to know the adversary and the environment. If intelligence is knowledge, or knowing, principles are the component part of *know*. From the perspective of knowing, expressed as a verb, the principles provide a basic understanding of what must be done, rather than as nouns, focused on products or producers, such as imagery or unmanned aerial vehicles. Furthermore, verbs allow those who use the principles to realize that there are many ways to accomplish *what* must be done, utilizing many different sources, and generating many different products to fill the leaders information requirement. The principles of intelligence are derivatives of *know*, and identified as the verbs detect, recognize, and understand. They represent levels of perception arranged in order of hierarchial discernment. For example, it is much easier to detect than to understand.[33]

These principles are closely tied to the characteristics of intelligence. Characteristics originate from the specific requirement of a leader for information

according to the principles previously identified. Characteristics describe the information provided to facilitate the decision. They are; relevant, timely, accurate, and predictive.[34] Relevant intelligence answers the decision maker's uncertainty questions. Timely intelligence arrives allowing sufficient time to implement the decision (action or reaction). Accurate intelligence correctly represents the information to the leader. Finally, predictive intelligence anticipates enemy actions or reactions, and future needs of the leader.

This section was titled, "What is intelligence?" That question has been answered. It is defined as information or knowledge of the enemy and the environment, both of which are processed and packaged for a specific customer's requirement for making decisions. Furthermore, intelligence is specific information that reduces uncertainty in the mind of a leader, allowing more timely implementation of decisions, thereby increasing the chances of successful actions. It's principles are identified as components of knowing, and are the action verbs detect, recognize, and understand. Each principle represents a level of perception higher than the previous. Finally, the characteristics of intelligence describe the information, regardless of the principles, facilitating leader's decisions. The characteristics are relevant, timely, accurate, and predictive.

Section 3-Theoretical Background

> The primary purpose of any theory is to clarify concepts and ideas that have become, as it were, confused and entangled. Not until terms and concepts have been defined can one hope to make any progress in examining the question clearly and simply and expect the reader to share one's views.[35]

Carl Von Clausewitz, Sun Tzu and Antoine Henri Jomini are three of the most influential theorists currently read. However, they are far from the only ones to influence US Army doctrine. Furthermore, full discussion of any one of the three requires much more space than one section of a monograph, much less attempting to analyze all three. Nonetheless, a short audit of each of their contributions and views furnishes a solid foundation to complete a study of intelligence support to operational art.

A review of these three military theorists provides two things for the study of the operational level of war. First and foremost is examination of each theorist's most significant conceptual theoretical contribution. Second is analysis of their theoretical views of intelligence, its capabilities and influence in war. Finally, their views are compared to provide a theoretical baseline of intelligence support to warfighters.

Arguably, the most significant contribution of Clausewitz is his concept of the center of gravity. This concept may also be the least well understood. Instead of punishing ourselves with disagreement of what Clausewitz really meant by center of gravity, we can better analyze what it can mean to the military professional. Clausewitz intended it to be an analogy and heuristic device to provide focus and unity of effort for the application of military force.[36] Addressing the center of gravity, Clausewitz states,

> One must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed.[37]

The significance of this concept is its linkage with strategic and operational aims or objectives of war. Two principles standout concerning such a linkage. Centers of gravity are derived from the aims at the level of war you are planning for, and objectives

established at the operational and tactical levels of war aid in imposing one's will over the center of gravity at the next higher level.[38]

Clausewitz implies that centers of gravity exist at each level of war.[39] Ideally, there is only one center of gravity at each level of war at one time, though there is no reason to dismiss the idea that more than one may exist simultaneously. It is also important to recognize that centers of gravity are rarely static and can change during the course of a war, campaign, or battle.[40] In World War I for example, during German mobilization the railroad system was a center of gravity. Once mobilized, the armed forces themselves became the center of gravity.

Although Clausewitz addressed only the strategic and tactical levels of war, he provided considerable insight concerning the operational application of the concept of centers of gravity. This assertion will be developed further in the next section, operational art. However, since operational art is primarily a conflict between military forces, we can easily deduce that the operational center of gravity is usually some form of military force available to the opposing operational or strategic commander.

One final point concerning centers of gravity includes a discussion of strength. An enemy center of gravity can not be a weak point. By its own definition, the enemy center of gravity, at any level, is a source of power, and hence is likely to be well protected. In this sense, war will have both sides attempting to protect their own centers of gravity while attacking, directly or indirectly, the opponent's. The side that correctly analyzed itself and its opponent, determined the center of gravity of both, and successfully attacked the opponent's while protecting its own normally comes out ahead.[41]

Clausewitz's strong conviction in identifying the appropriate center of gravity is not in his terms an intelligence activity, per se. He generally disdained intelligence in his writings. However, he does recognize the need for intelligence, defining it as, "every sort of information about the enemy and his country-the basis, in short, of our own plans and operations."[42] He further states that, "Military intelligence reports in war are contradictory; even more are false, and most are uncertain...In short most intelligence is false."[43]

Clausewitz scorns intelligence because, in his view, conflicting intelligence results in increased friction, chance and uncertainty. Therefore, his solution to the absence of reliable information are threefold. First, the intuition, or *coup d'oeil*, of the military genius guides him in effective decision making. Second, material strength, or overwhelming superiority in men and equipment guarantees victory in unclear situations. Finally, practice of the art of war through application of superior force at the decisive point (despite relative inferiority), and maintaining adequate reserves.[44]

However, even though Clausewitz overtly despises intelligence and considers it useless, his concepts to overcome the absence of information are covertly based on intelligence. The intuition of the commander is based on some level of reliable information. The cost of winning battles and campaigns, relying solely on superior numbers of men and equipment, is significantly more expensive without intelligence. Lastly, the application of military art requires extensive intelligence of the enemy force and environment (decisive points) in order to know your force will be superior at the selected

location. So, without specifically stating it, the application of Clausewitzian principles has a foundation in reliable intelligence.

Sun Tzu's significant contribution (and later B.H. Liddell Hart's) is the concept of the indirect approach. Sun Tzu offers the following advice concerning the indirect approach:

> He who knows the art of the direct and indirect approach will be victorious. (106)
>
> Go into emptiness, strike voids, bypass what he defends, hit him where he does not expect you. (96)
>
> Thus, march by an indirect route and divert the enemy by enticing him with a bait. So doing you may set out after he does and arrive before him. One able to do this understands the strategy of the direct and indirect approach. (103)
>
> He who wishes to snatch an advantage takes a devious and distant route and makes of it the short way. (103)[45]

The concept of the indirect approach is specific to maneuver. As such, Sun Tzu's views on maneuver are applicable to the operational level of war. Sun Tzu views maneuver as much as a way of thinking as any operational action. It is an attempt to gain positional advantage over an enemy for the purpose of exploiting that advantage. Maneuver is more than mobility or movement. The means to execute maneuver is mobility. However, maneuver actually aims to paralyze the enemy, presenting him with options only to surrender or sustain severe losses in defeat. Maneuver is not a way of moving, it is a way of thinking.[46]

The objective of maneuver is to gain a positional advantage so that the enemy quits because he knows defeat is imminent. If he chooses to fight, he loses quickly and decisively, even if his absolute strength is greater. Thus, the positional advantage provides superior relative strength at the decisive point.

Each level of war can take advantage of maneuver. Strategic maneuver can be interpreted as deterrence. Normally, the gained position of advantage encourages the opponent not to risk aggression for fear of the previously placed counterstroke. Likewise at the tactical level, positional advantage through maneuver may yield annihilation, withdrawal or surrender.[47]

Normally, the commander at the operational level strives to retain the flexibility of maneuver to choose when and where to give battle. As in strategy, battle can be deterred by positional advantage, encouraging the opponent to decide against a particular campaign. Additionally, once battle is imminent, positional advantage through maneuver may bring about withdrawal, surrender, or decisive victory as in tactics. The operational commander has numerous options for the conduct of campaigns, or avoidance of major operations.[48]

In sharp contrast to Clausewitz, Sun Tzu has a positive attitude toward intelligence. He insists that intelligence is one of the most important force multipliers. Furthermore, according to Sun Tzu, one of the most essential criteria for evaluating the capability of a commander is his intelligent use of intelligence.[49]

Sun Tzu strongly advocates the use of intelligence estimates prior to conflict, and further emphasizes the use of intelligence during the conduct of military operations. His methods reflect the times, with emphasis on the use of spies. However, he does not neglect the importance of other sources, such as detailed military reconnaissance, topographical and climatological data. He further identifies intelligence indicators of

specific enemy activities. Sun Tzu's positive attitude toward intelligence exemplifies his fundamentally rational and calculated approach to war.[50]

Although Antoine Henri Jomini provided numerous meaningful theoretical concepts such as lines of operations and principles of war for organizing a theater of operations, his most significant contribution is his concept of decisive points. Decisive points should not be confused with centers of gravity. They are more closely related to the concept of concentration of force. His concept was to mass armed force at places and times where an advantage was available. The points were decisive only if they were capable of significantly affecting the course of a campaign.[51]

According to Jomini, "the name decisive strategic point should be given to all those which are capable of exercising a marked influence either upon the result of the campaign or upon a single enterprise." He categorized decisive points into two types; geographic decisive points and decisive points of maneuver.[52]

Geographic decisive points are features of permanent importance to a specific area of operations. Based on the terrain, environment and configuration of the theater, geographic decisive points may include a fortress, river line, defiles, heights or capital cities. Conversely, decisive points of maneuver derive their importance from the positions of the hostile armies. They result from the relative positions of armed formations, usually providing an advantage to the formation arrayed against the opponent's flank. Jomini clearly states decisive points of maneuver are generally "on the flank of the enemy where he can more easily cut him off from his base and supporting forces without being exposed to the same danger."[53]

Jomini's views on intelligence fall somewhere between those of Sun Tzu and Clausewitz. Jomini arrives at realistic and balanced conclusions of the value of intelligence. His view is less optimistic than Sun Tzu's view of intelligence as a cure-all, yet more positive than Clausewitz's dismissal of it as an unreliable source of friction.[54] Jomini suggests that intelligence, in theory, is the foundation of successful military action:

> One of the surest ways of forming good combinations in war would be to order movements only after obtaining perfect information of the enemy's proceedings. In fact, how can any man say what he should do himself, if he is ignorant what his adversary is about?[55]

However, Jomini is also well aware of the difficulties involved in obtaining and communicating intelligence to the decision maker. He fully understands that intelligence will not be perfect, and uncertainty is always present on the battlefield. Jomini realized that despite the shortcomings of intelligence and the impossible task of totally eliminating fog and friction, intelligence must be aggressively gathered so as to increase the commander's opportunity for success through eliminating uncertainty to execute specific decisions.[56]

Jomini concludes his discussion of intelligence with a set of recommendations which are as valuable for today's military commander and intelligence adviser as when they were first written:

> 1. A general should neglect no means of gaining information...
> 2. By multiplying the means of obtaining information, for no matter how imperfect and contradictory they may be, the truth may often be sifted from them.
> 3. Perfect reliance should be placed on none of these (intelligence) means.
> 4. As it is impossible to obtain exact information by the methods mentioned, a general should never move without arranging several courses of action for himself, based upon probable hypotheses that the relative

> situation of the armies enables him to make and never losing sight of the principles of art.[57]

He understands that since intelligence is rarely perfect, uncertainty can be dealt with through operational contingency planning in combination with the correct application of the principles of war.

The preceding discussion accomplishes two objectives. First, as previously mentioned, the evolution of operational art from classical strategy is synonymous with maneuver warfare. The basis of maneuver warfare is provided through theoretical concepts. Those concepts provide the objective and purpose of maneuver, which is freedom of action allowing positional advantage to destroy the enemy's capacity, or will, to continue to wage war.

The connection of the theoretical concepts of centers of gravity, decisive points and indirect approach begins with aims, or objectives. The strategic aim is normally synonymous with the strategic center of gravity. The strategic objective is attained, at least partially, through operational actions. Operational objectives are aimed to overthrow the operational center of gravity, which may be considered a strategic decisive point. Lastly, tactical objectives are normally connected to operational decisive points. The link is maneuver. Through the indirect approach to the center of gravity, maneuver warfare aims to cause the center of gravity to capitulate. This is accomplished by defeating decisive points that are weaker or less protected than the center of gravity, yet provide relative support to it.

In review, centers of gravity are limited in number, ideally one per level of war. They are normally strong and well protected. Decisive points are geographic locations, or

enemy forces and functions. They support and protect the center of gravity. The measure of a center of gravity's strength is founded on decisive points, typically diminishing in strength further from the center of gravity in space and time. Accepting the assumption that decisive points are correctly identified and support the center of gravity, some will be more assailable than others. Furthermore, action directed against carefully selected decisive points can unhinge and eventually defeat the enemy's center of gravity without the risks of directly engaging the enemy's strength head-on. As such, decisive points provide an indirect avenue of maneuver toward the opponent's center of gravity. This indirect maneuver facilitates the defeat of the center of gravity at the lowest cost.[58] LTC Scott Marcy, a former squadron commander within the 2d Armored Cavalry Regiment, provides the theoretical scheme deduced from the above analysis. He states that, "concentrating strength (center of gravity) against the enemy weakness (decisive point) by gaining an advantageous position (maneuver)."[59]

The second objective involves understanding the views of the three studied theorists. They have significantly different attitudes toward intelligence. Clausewitz is openly negative, criticizing intelligence as unreliable and a source of increased friction. Sun Tzu, in sharp contrast, sees intelligence almost as an end in itself. His view is so positive toward the significance of intelligence that he loses sight of the difficulties and imperfection of it. Jomini falls between the two, and is probably the most accurate and realistic in the use and value of intelligence. He fully realizes the inherent value of accurate intelligence, but also recognizes that uncertainty will always exist in war. He understands that it is nearly impossible to gain perfect intelligence, yet advocates

aggressive measures to reduce uncertainty, fully realizing that the results can significantly increase the chances of a commander's battlefield success.

Most importantly, the concepts of centers of gravity, decisive points and indirect approach provide the groundwork for an examination of maneuver warfare defined as operational art. Furthermore, those same concepts, whether explicitly stated or not, are founded on reliable intelligence, providing the start point for the analysis of intelligence support of operational art. Regardless of the attitudes of Clausewitz, Sun Tzu and Jomini concerning the value of intelligence, the successful application of their concepts require the practice of competent intelligence support operations and the diligence of intelligence professionals.

Section 4-Operational Art

> Operational art comprehends battle without being concerned with its actual conduct...(it) involves the creative use of battle, the threat of battle or the denial of battle to accomplish a particular strategic purpose within a specific context, the most significant part of which is most often the opposing actions of a foe.[60]

Surveying previous discussions within this paper, the operational level is where the critical linkage of strategic goals to tactical actions occurs. It is the level where military art and military science are evenly applied. The operational level is the essential link between the desired endstate determined at the strategic level, and less orderly actions occurring at the tactical level.

Narrowing the field of view from the strategic perspective of war to include only the military element of power brings the operational perspective more clearly into focus.

This level is best described as the perspective of military commanders conducting major military operations or campaigns, usually involving extensive planning and logistic support in order to attain strategic aims.[61] From the operational perspective, military commanders identify military objectives and coordinate military forces of all services to achieve the military objective in support of national strategic goals and guidance.[62] Simply, operational art is the conduct of military activities at the operational level through the translation of strategic objectives into tactical operations.

It is imperative to further examine operational art prior to any discussion of intelligence support to the operational artist. The overarching task of operational art is to attain the strategic aim through operational objectives. To accomplish operational objectives, the operational commander must do three things; know, plan, and execute.[63] Finally, the definition of operational art becomes more easily understood with a clear grasp of the tasks and information needs of the operational artist.

Operational art evenly applies both military science and art. The fusion and subsequent application of both determine some basic needs of the operational artist. Closer examination of these aspects clarify what operational art really is, and the foundation of the operational commander's tasks.

The dictionary definition of science is "systematic acquisition of knowledge...that can be measured precisely."[64] Conversely, art "is performing action acquired by experience, study, or observation."[65] Appropriately, art is the application of knowledge (science) through action. Science is knowing, and art is doing based on knowing.[66]

The operational commander requires knowledge, which applied to the military situation determines a plan that leads to action. However, the environment of conflict and resistance complicates the fusion and application of knowing (science), planning, and doing (art) at the operational level.

The operational commander is continually faced with significant obstacles to operational success. Each obstacle, or problem, typically requires a decision for action. The decision(s) are usually made under pressure of time and situational circumstances beyond the control of the decision maker. In most cases the commander makes decisions with incomplete knowledge, requiring battlefield visualization. His ability to see through the lack of information, understand the implications of the moral conditions, appreciate what lies beyond the present battlefield and how the immediate decision impacts on future capabilities to attain the strategic purpose is the fundamental work of the operational artist. Clausewitz identified this faculty as coup d'oeil.[67] Information is merged with educated judgment, mature skill, and instincts to overcome conflicting reports, gaps in knowledge, and doubt to arrive at a decision. In short, the operational artist uses knowledge (science) and creative ability (art) to contend with unknown moral factors, friction and uncertainty to solve his myriad of problems while always keeping an eye on the strategic endstate.

The equal combination and application of military art and science at the operational level identifies the information requirements of operational art. Initially, the operational artist needs to know the circumstances concerning the environment, enemy, and friendly forces, otherwise known as situational awareness. It provides the decision

maker a broad situational understanding, anticipating future conditions and allowing him to contemplate the implications of pending actions. Since the decisions of the operational commander are typically made under the pressure of time, he needs timely information relevant to the decision that solves the specific problem. In this sense the information requires accuracy in order to ensure appropriate action, such as maneuver or fires. In summary, the operational artist requires knowledge of the situation that is timely, relevant, accurate, and predictive allowing him to implement creative solutions to complex problems.

The performance of the three basic tasks provides structure to the conduct of operational art, the flow from knowing to doing. The first task of the operational artist is to *know*. The operational artist derives knowledge from information about his own forces, the adversary, and environment. Typically, this information is provided through previously established data bases and reporting processes. Moral factors, friction, and all kinds of uncertainty directly impact upon knowing. Furthermore, this first task is critical to the successful accomplishment of the other two tasks, plan and execute. Degrading the ability to know subsequently affects planning and doing negatively. Without knowledge, military action becomes less effective, and ultimately aimless, leading to blind attrition rather than strategic ends.

The *know* task feeds directly into the *plan* task. The *plan* task is the cornerstone and core of operational art. The essence of the *plan* task, and the practice of operational art is provided by theory. Military theory contributes to the understanding of the application of military force at the operational level and directly influences planning. It

teaches that maneuver warfare is the way that the operational artist attains the strategic ends. The important point here is maneuver warfare to attain strategic objectives.

The very fiber of maneuver warfare, or operational art, is the attainment of the ends without costly expenditure of lives and material. The strategic ways and means provide the concept and resources for the operational artist to attain the ends, ideally without serious fighting.[68] However, the focus in the theater of operation begins with the articulation of the strategic goal. It is ideally equivalent to the strategic center of gravity, or is directly connected to it. The operational artist employs military force as the medium to attain the strategic aim in accordance with the restrictions and constraints determined from the strategic ways.

The operational task of *plan* requires identification of the operational objective. Strategic aims elicit strategic centers of gravity, that in turn allow for the establishment of operational goals from corresponding centers of gravity. The strategic center of gravity is supported by certain critical decisive points. Strategic decisive points represent operational objectives, of which one is the source of strength, or the operational center of gravity. In this way, operational centers of gravity become operational objectives and are linked to the strategic goal. If properly identified, the operational objective (operational center of gravity) reflects a particular strategic decisive point, a key rung that supports the strategic center of gravity.

With the national aim in mind, the operational artist determines military objectives at his level in support of the higher aim. Typically, the operational center of gravity represents some particularly concentrated and lethal enemy force, capable of denying

freedom of action. Continuing the linkage to the tactical realm, operational centers of gravity are supported by operational decisive points. These critical operational decisive points in turn are designated tactical objectives.

Proper identification of objectives is the basis for production of the campaign plan. The plan flows from the objectives and is the synthesis of operational design where the concept of the operation materializes in an articulated vision to attain the stated objective.

The operational artist uses the concept of maneuver warfare in planning to attain operational objectives. The most advantageous way to accomplish this is through the application of friendly strength against enemy weakness. The weaknesses, or vulnerabilities, have been previously identified by the *know* task. Enemy strength is concentrated at the center of gravity, while decisive points are more vulnerable. Furthermore, the attack of vulnerable decisive points through asymmetrical attack allows for the possibility of subsequent exploitation, further weakening the center of gravity. Major Stephen Runals, a former graduate of the School of Advanced Military Studies, makes the following statement in an article in Military Review:

> Operational art involves the identification of an enemy center of gravity within each area of operation. It (operational art) also defines the organization and subsequent focusing of superior combat power at deliberately selected points of vulnerability or of decision that directly or indirectly attack centers of gravity, thereby achieving decisive success.[69]

Maneuver warfare emphasizes the indirect approach through decisive points that leads to the capitulation of the center of gravity. The plan develops decisive operations aimed at enemy weakness, indirectly attacking the center of gravity. The operational artist strives to maintain balance while at the same time disrupting the enemy's balance by

striking from unexpected directions.[70] He seeks to overthrow the operational center of gravity preferably by attacking weaker operational decisive points. Consequently, operational objectives and decisive points are the foundation for tactical objectives. The objectives chosen should be attainable with the forces at hand, in a reasonable amount of time, and at the smallest possible cost in lives and material.[71] The operational artist plans to attack the designated tactical objectives through simultaneous and sequential operations. If properly identified and attacked, attainment of tactical objectives (decisive points) will eventually cause the downfall of the strategic center of gravity, like a house of cards. These sequenced operations conducted in depth, space and time is known as the campaign. They continually avoid the main enemy strength, but systematically weaken it until it surrenders or is fragile and vulnerable to direct attack. LTG L.D. Holder, currently the commander of the Combined Arms Center and commandant of the United States Army Command and General Staff College, may have described this concept best in an article he penned in 1985:

> Whether attacking or defending, the concept of operation should embody a flexible approach to theater objectives that emphasizes the strengths of the friendly force, accentuates the enemy weaknesses and recognizes the operational conditions...Speed, surprise and multiple paths to the objective have characterized the best operational planning. Baron Jomini's old prescription of concentrating the greatest possible strength at the decisive time and place remains a worthwhile goal; the problem of determining where and how is the challenge, as it always has been.[72]

The campaign plan melds theory with practice. It represents the operational artist's vision and articulates his intent, clearly identifying what constitutes success. The plan identifies centers of gravity and decisive points, both enemy and friendly. Those of the enemy become assigned as objectives, attained through major operations. Friendly

centers of gravity and decisive points become prioritized for protection. The campaign plan formulates from the concept of attacking critical, yet vulnerable decisive points as major operations. The plan then sequences these operations, conducted simultaneously and in depth through a concept that unifies the effort between land, sea and air forces, focused on one unifying objective, the enemy operational center of gravity. Linked together sequentially and simultaneously, successful major operations attain the operational objective.

It is imperative to note that the campaign plan should not become a rigid tool, incapable of adjustment. It must be flexible, with branches and sequels designed to take advantage of success, overcome failure, and exploit opportunity based on a fluid situation. Finally, and of significant importance, the plan develops a schedule of decisions expected to be made during the execution of the plan. The schedule of decisions is the key to execution.[73]

The third task of the operational artist is *execution.* It is dependent on both the *know* and *plan* tasks. *Execution* can be thought of as three interwoven sub-tasks; move, shoot, and communicate. They are all dependent upon each other for successful application of operational maneuver warfare. However, each is examined separately.

The term move is better identified as operational maneuver. Maneuver sets the conditions for battle, including declining battle when appropriate. It can be offensive or defensive, but the critical aspect of maneuver is to place combat power at the critical decisive point, resulting in enemy surprise, battlefield dominance, and securing a decisive advantage. Furthermore, successful operational maneuver secures geographic decisive

points, deprives enemy resources, disrupts enemy operations, holds the enemy in place and isolates him, and sets the conditions for future operations. The key to successful maneuver is knowledge of enemy vulnerability in order to attack objectives indirectly.[74]

Shoot is better described as operational fires. Fires are limited in effectiveness if not integrated with maneuver. However, if properly coordinated and integrated, operational fires can strip, or directly attack enemy centers of gravity and decisive points. Further, attack of key targets sets the conditions for operational maneuver by disrupting enemy capabilities prior to their employment. Operational fires facilitate maneuver by suppressing enemy systems through interdiction of enemy deep strike systems, maneuver formations, and defenses in depth. The two key results of operational fires are isolating enemy forces (centers of gravity), and destroying critical enemy functions and facilities (decisive points)[75].

Last, operational battle command describes the communicate function, and is critical to the other two operational tasks. It concentrates the effort and synchronizes tactical actions. It focuses the *know* task to provide specific information in support of both planning and execution. Second, battle command provides vision and intent to produce the campaign plan. Most importantly, it controls the decision schedule developed in the campaign plan, directly controlling the termination and commencement of major operations. Battle command is the 'joystick' of the operational force, controlled by the operational artist. He adjusts the 'joystick' based on knowledge that is specific to the decisions to be made.

This intercourse establishes the foundation to understand the definition and framework of operational art. In the simplest terms, the development of campaigns to achieve strategic objectives is operational art. Furthermore, operational art plans, coordinates and sequences the outcomes of individual tactical events into a chain of linked actions, within the context of major operations and campaigns, that together achieve the aims and objectives established by strategy. Only when tactical actions are linked together with the results of other engagements do they become meaningful within the context of a campaign.[76] The preceding discussion gives meaning to the definition of operational art as provided by Joint doctrine, "the use of military forces to achieve strategic goals through the design, organization, integration, and conduct of strategies, campaigns, major operations, and battles."[77]

The close examination of operational art from the perspective of the military aspects of science, art and theory provide the tasks and needs of the operational artist, as well as a clearer understanding of the definition of operational art. Know, plan, and execute are the tasks of operational art. Know the situation relative to friendly forces and those of the enemy, plan campaigns and major operations, and execute simultaneous and sequential actions. The fusion of military science and art at the operational level determined that the commander required knowledge, consisting of timely, relevant, accurate, and predictive information specific to solve the problems expected and those unforeseen. Theory specifically provides tools to the operational commander that are the essence of operational art and critical to the identification of objectives enabling attainment of the strategic endstate. The operational commander, at a minimum, must

identify the most concentrated and lethal enemy formation, the operational center of gravity, and those decisive points that lead to its downfall. Furthermore, maneuver warfare establishes the concept of attacking enemy weaknesses that bring about the demise of the center of gravity, the indirect approach. Thus, enemy vulnerabilities directly linked to the center of gravity attacked asymmetrically with friendly strength through simultaneous and sequential operations is the spirit of operational art.

Section 5-Defining Operational Intelligence

> The decisive factor in warfare has often been combat intelligence. It has been of major influence in every battle, campaign, and war in history, affecting the outcome of struggles between squads and armies. Yet, no other single factor has been so consistently ignored and neglected by unsuccessful commanders. Nothing else has been so universally used and emphasized by successful commanders.[78]

Accepting the premise that operational art is synonymous with maneuver warfare, and that maneuver warfare is knowledge dependent, then operational art is impossible without intelligence. If the medium of the operational artist is military force, then the enemy is the canvas. Operational intelligence is the key to each and every task of the operational artist. Without it, motion and action are wasted effort in the hope of finding and engaging enemy forces.

However, to begin this discussion, a definition of operational intelligence is required. That definition becomes a merger between those of intelligence and operational art. Furthermore, operational intelligence support to operational art is derived from the tasks of the operational artist. The tasks can not be accomplished without adequate intelligence assistance. Since operational art is founded in theory, it only makes sense that

the intelligence support of operational art derive it's tools from theory. Additionally, the information requirements of the operational commander to practice operational art determine the characteristics of operational intelligence.

Like the levels of war, intelligence has three overlapping and interconnected layers, strategic, operational and tactical. Traditionally, the categories of military intelligence were divided between the tactical and strategic levels only. Strategic intelligence focuses on the National Command Authority (NCA), unified commands, and subordinate service component commands. Tactical intelligence focuses at corps and below. Both strategic and tactical intelligence provide valuable data to the operational artist, but it is not enough to state that the intelligence requirements of the operational commander are satisfied by a fusion of tactical and strategic intelligence. Strategic intelligence is too broad and typically unresponsive for the operational commander, while tactical intelligence remains narrowly focused on evolving battles and engagements.[79]

Operational intelligence is different in time, space and context from strategic or tactical intelligence. It is responsive to the operational commander, and by its nature is more predictive and anticipatory than both. Rather than wedging operational intelligence between tactical and strategic, a better genesis of the meaning of operational intelligence is acquired from the definitions of intelligence and operational art. Intelligence was defined as the information or knowledge of the enemy and the environment, processed and packaged for a specific customer's requirement for making decisions. Operational art was defined as the use of military forces to achieve strategic goals through the design, organization, integration, and conduct of strategies, campaigns, major operations, and

battles.[80] Their combination provides the definition of operational intelligence as information or knowledge of the enemy and environment required by the operational commander to make decisions and to plan and execute campaigns and major operations.

Recognizing the fact that the scope of operational art is broad, flexible and situationaly contingent, operational intelligence should be rooted in the theory of operational art.[81] The theory of operational art began with the even application of military science and art. Science is knowledge, and art is the creative application of knowledge. In this sense, intelligence of the enemy and environment becomes a large portion of the *know* task of operational art, thereby decisively influencing the *plan* and *execute* tasks.

This should not imply that operational intelligence lies strictly in the realm of science. On the contrary, operational intelligence, like operational art, evenly applies science and art. Science, or raw data collection, is synonymous with the gathering of quantitative elements in combination with their capability data. It is typically easy to measure, for example the number of aircraft, ships, tanks, artillery pieces, divisions, and supply stocks. Art is synonymous with qualitative elements, and deals with two aspects which cannot be readily measured. The first being non-material dimensions, such as the quality of the manpower, morale, doctrine, planning, and leadership.[82] The second, and most important, is the synthesis of the quantitative elements and the non-material dimensions into relative operational capabilities and intentions, culminating in predictions of enemy aims. Just as in operational art, the values associated with quantity (science) and quality (art) are inextricably linked, and the foundation of operational intelligence.

The theory of operational art, and thus operational intelligence, is rooted in the concept of maneuver warfare. Richard E. Simpkin states in his book, Race to the Swift, "It may not be too much to say that the primary factor in making manoeuver [sic] theory work for you is establishment of a discrete concept of 'operational intelligence' and provision of the means to realise [sic] it."[83] This implies that maneuver warfare is knowledge dependent since its methods rely on the precise application of effort against correctly identified weak points. The common thread among the writings on maneuver warfare is the mandate of attacking enemy weaknesses.[84] This concept identifies a key function of operational intelligence, that being to identify the enemy weaknesses.

The premise of identifying weaknesses is a broad one. However, it is the clue that links military theory, operational art and operational intelligence. The key function of identifying weaknesses is significant in support of the tasks of operational art. In accomplishing any of his tasks, the operational commander requires knowledge. Knowledge specific to intelligence is information of the enemy and the environment. Initially, previously developed data bases contain knowledge of the enemy and environment as the start point for intelligence support. The *know* task requires intelligence to have both a broad understanding of the adversary and general situation, and a detailed grasp of enemy capabilities and likely intentions in order to predict enemy actions. The intelligence support to the *know* task detects, recognizes, and understands both enemy strengths, to be avoided, and weaknesses to attack. Additionally, intelligence provides environmental data concerning the terrain and weather that impact upon enemy and friendly freedom of action. This initial burst of knowledge impacts upon both of the other

two tasks, *plan* and *execute*, as the basis for plan development and identification of intelligence gaps impacting prosecution of the decision schedule.

Any degradation of intelligence support to the *know* task increases friction. The intelligence gaps are sources of uncertainty, compounding the risk involved in any operation. Intelligence has the mission of reducing uncertainty in the mind of the commander, thereby decreasing the risk involved with his decisions for action. LTG Crosbie E. Saint, then the commander in chief of United States Army, Europe and Seventh Army, and commander, Central Army Group, supports this view as a proponent of mobile (maneuver) warfare, stating:

> Tactical victories contribute to success at the operational level of war only if they reduce the enemy's ability and will to fight. Occupation of terrain objectives avails us little, if the enemy has the means to regain the initiative...The need to make faster decisions will be critical, but those decisions will be made in an environment of risk. Our task is to reduce that risk to an acceptable level by putting near-real-time, accurate intelligence in the hands of the commanders who must adapt quickly to a dynamic battlefield.[85]

Without intelligence, the *plan* task of operational art loses its significance. Intelligence merges with military theory during this task by analyzing strategic guidance and subsequently identifying military objectives through the use of theoretical concepts of centers of gravity, decisive points, and the indirect approach. Operational art requires operational intelligence to determine them within the context of the strategic aim and the operational area.

Concentration of the greatest possible strength at the decisive time and place is impossible without intelligence. In this sense, operational intelligence is the means in which the operational commander determines tactical military objectives and the campaign

plan. It identifies enemy formations, of which, the one with the most concentrated and lethal combat power is normally the operational center of gravity and objective. This enemy formation is typically strong, well protected, and rarely accessible to direct attack. Operational intelligence further identifies geographic locations or other enemy formations that will provide an advantage if seized or attacked, based on the operational commander's concept of the campaign. These decisive points are places or elements that are weaker than the center of gravity, but support it's strength. The critical decisive points are designated as tactical objectives. Operational intelligence links the tactical objectives and uncovers the indirect approach to the steadily weakening center of gravity.

Operational intelligence also provides the direction for the planning of branches and sequels to the campaign plan. Branches and sequels are developed in anticipation of enemy reactions that alter the basic plan, and from the outcome of current operations. The anticipated enemy reactions result from predictive intelligence. Anticipating enemy reactions and outcomes of major operations, and planning for them provides the operational artist options.[86]

Finally, and most significantly operational intelligence is essential for the execution of the campaign plan's schedule of decisions. The decision schedule is developed from predicted enemy actions and reactions identified by intelligence. The expected decisions subsequently drive operational intelligence to obtain specific information relative to the commander's threshold to execute the planned action.

Summarizing intelligence support to planning, operational intelligence is the foundation for the development of the campaign plan and appropriate branches and

sequels. It identifies the operational objective from the enemy center of gravity, and tactical objectives from critical, yet vulnerable decisive points. Operational intelligence identifies the indirect approach by linking the sequential and simultaneous attack of the tactical objectives leading to the capitulation of the center of gravity. Lastly, operational intelligence is key in the development of the decision schedule, thereby focusing the intelligence effort during the *execution* task.

Operational intelligence is the dominant arm of decision in the execution of major operations and campaigns. Without intelligence, decisive maneuver warfare occurs only by accident. The *execution* task is dependent on both the *know* and *plan* tasks, and has the objective of imposing the operational artist's will over the operational center of gravity. Violent execution brings the enemy to his knees, and is heavily dependent on intelligence. Fighting with good intelligence means knowing where your enemy's jugular vein is and how to rupture it.[87] Operational intelligence identifies the jugular vein, how to get to it during planning, and the linchpin to sever it during execution. *Execution* is accomplished by the three sub-tasks of move, shoot, and communicate. Operational intelligence is the glue that allows successful conduct and integration of the sub-tasks.

Move, or operational maneuver, sets the conditions for battle, or declines battle. It places combat power at the decisive point. However, battle occurs only when both the enemy and friendly forces accept it. Intelligence determines the conditions and the state of the enemy, allowing the commander to decide where, how, and if to fight. Operational maneuver secures geographic decisive points, deprives enemy resources, holds and isolates the enemy, and disrupts enemy operations and plans. However, it only

accomplishes this if operational intelligence has identified the decisive points, resources, enemy locations and intentions. Operational maneuver is largely ineffective without operational intelligence.

Shoot, or operational fires, strips or directly attacks enemy centers of gravity and decisive points. Specifically, fires interdicts enemy deep strike systems, maneuver formations, and defenses in depth, but only if timely and accurately identified by operational intelligence. Operational fires cannot isolate enemy forces (centers of gravity) or destroy critical functions and facilities (decisive points) without operational intelligence.

Communicate, or battle command, is critical to both the plan and execute tasks. Without intelligence, the operational artist's vision of the battlefield is bankrupt, and his intent articulated in the plan is at best difficult to be attained. During execution, battle command is the drive behind and control of the decision schedule. Battle command focuses the operational intelligence effort to support the expected decisions to provide the intelligence that terminates and commences sequential and simultaneous operations. Also, it is the steering mechanism for intelligence to solve unexpected problems. Without intelligence, battle command at best sees only half of the situation, gets only half of the information (friendly), and solves few of the problems arising in the course of a campaign.

Finally, the mission of intelligence to reduce uncertainty in the mind of the commander is more than just identifying enemy strengths and weaknesses. Conversely it is more, or in this case less than the indiscriminate application of the principles of detect, recognize, and understand to the entire theater of operations. If it was, the result would be a landslide of every tidbit of information, creating confusion and chaos rather than more

certainty. In this sense, the nature of uncertainty may be changing. Initially, it stemmed from a lack of accurate knowledge, now it may occur from both a lack of accurate knowledge and useable knowledge. The solution to the first problem was to generate more intelligence. More intelligence led toward knowledge.

However, there is a point of diminishing returns where more information begins to create more uncertainty, a new kind of uncertainty, thereby generating the second problem.[88] That being a flood of information where accuracy and usability is in question. John Ferris aptly described this problem, "When one knows everything, the problems is to know when one knows enough...Perhaps only a 'military genius' will be able to decide when."[89] The only solution is for the operational commander to focus the intelligence gathering effort to provide information that will aid in making specific decisions. The focused effort, rather than the landslide of information, is the genesis of the characteristics of intelligence that in effect reduce uncertainty and risk for the commander. The characteristics of intelligence are synonymous with the information requirements of the operational artist, those being timely, accurate, relevant and predictive intelligence.

This brings us back to the art of operational intelligence. The science detected, recognized and understood information consisting mostly of quantitative elements. The cutting edge of intelligence work is the art, the sorting out of all of the data and making sense of it, figuring out what the enemy intends to do. Putting the available pieces of the puzzle together with an eye toward the quantitative elements of the science, while at the same time envisioning the missing pieces and predicting what the puzzle looks like complete is the art. This part must be considered in the context of friendly operations and

plans. Additionally, only when the information requirements (missing puzzle pieces) are focused by the commander, relative to friendly operations, and specific to commander's decisions will intelligence become a force multiplier permitting achievement of better results on the battlefield at a lower cost.[90]

At this point it is imperative to clarify that intelligence can never achieve complete and absolute perfection. No one can ever perfectly predict the actions of the adversary. In War, Ends and Means, Paul Seabury states, "Knowledge of the enemy's purposes and plans does not guarantee victory in war. But nothing so enhances one's forces or detracts form the enemy's..."[91] Uncertainties are the very nature of conflict, and decisions must always be made on the basis of imperfect knowledge. Commanders will virtually never have all of the information that they would like to have, and as such they must be prepared to act with decision in the uncertain environment of war.[92] Additionally, in developing the campaign plan, the operational commander must remember that the skillful enemy will seek to disrupt every planned friendly operation, for his aim is the same, to win at the smallest possible cost.

Operational art requires an extensive intelligence effort. The effective planning and execution of it is impossible without operational intelligence. The definition of operational intelligence is information, or knowledge of the enemy and environment required by the operational commander to make decisions and, to plan and execute campaigns and major operations. In consonance with the definition, it must provide knowledge of the enemy and environment, anticipating enemy actions specific to the commander's decision making needs. The characteristics of operational intelligence are

derived form the needs of the operational artist. The needs were identified as timely, relevant, accurate, and predictive information specific to the decision, reducing the risk, or uncertainty, of ordering a particular action. The decision maker, or commander, must focus the system sufficiently to provide the specific intelligence he requires, rather than attempting to know everything. By focusing the system, the decision maker communicates the level of detail he requires to make the decision. It determines and prioritizes which of the intelligence tasks of detect, recognize, and understand adequately provide intelligence appropriate to the decision maker's threshold for action. The art of operational intelligence includes the analysis of the enemy center(s) of gravity, and decisive points. In this sense, operational intelligence identifies the objectives of the operational commander, the basis for developing campaign plans. Operational intelligence further provides the vital components for the linkage of tactical military actions (objectives) to the attainment of the strategic endstate. Those components being the indirect approach through critical decisive points leading to the weakening, capitulation, or eventual direct attack of the center of gravity.

Section 6-Doctrinal Assessment

> As we work the operational aspects...a series of truths becomes evident. These truths carry our intelligence operations into previously uncharted territory. First, we must seek out the enemy's center of gravity, focusing on the identification of his vulnerabilities. Second we will only be able to solve the vulnerability problem if we translate concepts such as priority of effort into IEW operations. We must learn to focus our collection and analytical efforts. Third, we must learn to communicate critical intelligence faster. Intelligence output must be timely, succinct, and appropriate to the level of command which receives it.[93]

Recognizing that the magnitude of operational art requires doctrine that is expansive, flexible and situationaly contingent, this paper accepts the presumption that some operational intelligence doctrine should be embedded in the theory of operational art. The purpose of defining operational intelligence and exploring it's characteristics in support of operational art is to analyze both Army and Joint doctrine, and determine if it is addressed accordingly. Doctrine has a profound effect upon the conduct of the military services of the United States, and has been fundamental to Army operations. Army doctrine is the statement of how the Army intends to conduct war and operations other than war. It is the condensed expression of the Army's fundamental approach to fighting, influencing events in operations other than war, and deterring actions detrimental to national interests. Army doctrine is a guide for commanders, describing how to think about the conduct of campaigns, major operations, battles, engagements, and operations other than war.[94] Likewise, the role of Joint doctrine is to present fundamental principles that guide the employment of military forces. It deals with the fundamental issue of how best to employ the national military power to achieve strategic ends. Joint doctrine is designed to facilitate clear thinking and assist the commander in determining the proper course of action under the circumstances prevailing at the time of decision.[95] Since doctrine is fundamental to Joint and Army operations at all levels of war, it is imperative that the role of intelligence at the operational level be properly recognized and addressed within the context of operational art. It is particularly important in light of the fact that both doctrine and intelligence influence decisions to achieve objectives through tactical actions.

An assessment of Army and Joint intelligence doctrine reveals that they both similarly address operational intelligence. Two specific areas merit comment. First, both adequately identify and address the characteristics of intelligence. Second, both fail to sufficiently distinguish the necessary linkage between operational intelligence and theory, and the dependence of operational art on intelligence.

Field Manual (FM) 34-1, Intelligence and Electronic Warfare, is the cornerstone manual of Army intelligence. It briefly addresses most of the components of operational intelligence, but fails to adequately recognize the key connections between concepts of operational art and intelligence. It defines operational intelligence as intelligence support to the planning and execution of campaigns and major operations. Further, FM 34-1 states that it accomplishes this through "predicting the enemy's campaign plans, identification of their military centers of gravity, lines of communication, decisive points...and other components necessary for campaign design."[96]

The tasks and characteristics identified within FM 34-1 adequately describe operational intelligence in accordance with this study. The tasks in Army doctrine are more specific to the conduct of intelligence work, but adequately address the more conceptual tasks of detect, recognize and understand.[97] There is plenty of overlap, as the doctrinal tasks are overlaid upon the conceptual tasks, indicating that the tasks are developmentally linked to each other, and evolve from one to the next. The characteristics of effective intelligence identified in Army doctrine (timely, relevant, accurate, predictive) also adequately address the identified information needs of the operational artist. In fact they are identical.

Lastly, Army doctrine addresses commander's critical information requirements (CCIR) as the way the commander focuses his information gathering. The threat and environment portion of the CCIR are designated as priority intelligence requirements (PIR). The doctrinal concept of PIR allows the commander to focus the intelligence system in support of decisions expected to occur during the course of a campaign.[98]

Army doctrine identifies most of the tasks and characteristics of operational intelligence, and even briefly discusses it. However, it fails to make some critical connections and provide a "how to" approach to the workings of intelligence in support of operational art. It is inadequate to merely mention that intelligence supports campaigns by identifying key theoretical components such as centers of gravity, decisive points, and direct or indirect approach. It is even more distressing to note that in FM 100-7, Decisive Force: The Army in Theater Operations published in 1995, fails to even mention the theoretical concepts within the section *Operational Intelligence* after discussing them in the *Operational Art* section.[99] Within Army intelligence doctrine, the task to identify center(s) of gravity, decisive points and the indirect or direct approach is at least stated, but requires additional explanation. Much of that explanation is found in FM 100-5, Operations.[100] However, the intelligence doctrine lacks the vision to grasp the concepts, explain them in terms of intelligence application, and further link them to intelligence support of operational art. It miserably fails to address what these terms mean and how the intelligence system identifies and uses them, particularly in their linkage to objectives at all levels and the art of maneuver warfare. In fact FM 34-130, Intelligence Preparation

of the Battlefield, specifically equates center(s) of gravity to vulnerabilities.[101] This is clearly incorrect.

Due to the very nature of Joint operations, Joint doctrine addresses operational intelligence more comprehensively than Army doctrine, yet has similar deficiencies. It's definition and attention to tasks and characteristics is adequate. Unfortunately, it also fails to adequately link concepts of operational art to intelligence.

Joint Pub 2-0, Joint Doctrine for Intelligence Support to Operations, defines operational intelligence as that required for planning and conducting campaigns.[102] It adequately describes the characteristics, called attributes of quality intelligence.[103] Likewise, it addresses the functions, or tasks sufficiently.[104] These characteristics and tasks are similar to the characteristics and tasks identified in this paper and do not need further elaboration.

The breakdown in Joint doctrine occurs in the linkage of operational art to operational intelligence. Joint Pub 3-0, Doctrine for Joint Operations, in discussing the characteristics of operational art, points out the value of the identification of center(s) of gravity, decisive points, and the indirect approach. It states that identification of the center of gravity is critical, and that they are frequently well protected. This explanation further identifies more vulnerable decisive points as, "the keys to attacking protected center(s) of gravity."[105] Operational doctrine also identifies the linkage of such decisive points to the center of gravity with the indirect approach, advocated in Joint Pub 3-0 as the optimal course to attack the enemy until the center of gravity crumbles, or is sufficiently weakened to be directly attacked.[106] However, Joint intelligence doctrine falls

short in linking this concept to intelligence practice. Joint Pub 2-0 illustrates that intelligence identifies and nominates military objectives, but does not make the logical leap to correlate the objectives to centers of gravity and decisive points.[107] This is an important step in linking theoretical concepts in operational doctrine to intelligence doctrine.

Both Army and Joint doctrine adequately address the science of operational intelligence by describing it's characteristics and tasks. They both illustrate that intelligence is critical to operational success, that it must be guided by the commander to answer his specific requirements, and that it reduces uncertainty. However, both Army and Joint intelligence doctrines fail to adequately identify the linkage between operational art and intelligence, particularly concerning military objectives and operational design through the concepts of center(s) of gravity, decisive points, and the indirect approach. This linkage is critical to the successful orchestration of intelligence and maneuver warfare, or operational art. Furthermore, intelligence is crucial to campaign planning and operational execution.

Section 7-Conclusion

> Good intelligence unleashes well-aimed killing power. Poor intelligence kills good soldiers.[108]

The operational level is arguably the most critical of the three levels of war. For it is here that tactical actions are linked to strategic aims. It is also at this level where military art and military science is evenly applied as operational art to the unique environment of war. The application of operational art is synonymous with maneuver warfare, and maneuver warfare is knowledge dependent. It avoids enemy strength, as

such the key function of intelligence at the operational level is to identify enemy strengths and weaknesses, thereby reducing uncertainty in the mind of the commander.

The nature of operational intelligence is derived from an understanding of the meaning of intelligence, theory, and operational art. The definition of intelligence is the information or knowledge of the enemy and the environment, both of which are processed and packaged for a specific customer's use in decision making. Its principles are the verbs detect, recognize and understand and its characteristics are described as timely, relevant, accurate, and predictive.

Theoretical concepts bind operational art to maneuver warfare and intelligence. Clausewitz provides the concept of center of gravity, the source of enemy strength. Jomini identified the decisive point, a geographic or maneuver element that if attained or overcome provides a marked advantage. Decisive points are weaker than centers of gravity, and like the legs on a stool support it. Finally, Sun Tzu identified the advantages of the indirect approach. The indirect approach is the route to the center of gravity through the more vulnerable decisive points. Furthermore, theory provides the foundation for operational art, the translation of strategic aims into tactical actions. Strategic aims elicit strategic centers of gravity, that in turn allow for the establishment of operational goals and associated centers of gravity. Operational goals and centers of gravity establish the foundation for the selection of tactical objectives.[109] In this light, theory provides the concepts for establishing tactical military objectives within operational art.

The nature of operational intelligence is further derived from the needs of the operational artist to apply operational art. As previously identified, operational art evenly

applies military science and military art. As such the requirements are to know, or science, and to act based on that knowledge, or art. This premise is also derived from the definition and meaning of intelligence where the commander needs timely, relevant, accurate and predictive information.

Intelligence, rather operational intelligence, is derived from each of the above concepts. Its definition is a combination of the definition of intelligence and operational art. The proposed definition is information or knowledge of the enemy and environment required by the operational commander to make decisions and, to plan and execute campaigns and major operations. Operational intelligence is rooted in maneuver warfare. It must be focused by the commander to meet decision making requirements. Lastly, it is the means to identify enemy strengths and weaknesses, theoretically centers of gravity, decisive points and the indirect approach.

Both Army and Joint intelligence doctrine have made cursory attempts to adequately address operational intelligence. Both have identified intelligence tasks and characteristics that are nearly synonymous with those identified in this study. However, they have missed an essential point. Both intelligence doctrines fail to adequately identify the linkage between operational art and intelligence. Operational doctrine identifies the key theoretical concepts of center(s) of gravity, decisive points, and the indirect approach. Nevertheless, intelligence doctrine fails to adequately fulfill its role in support of operational art as the lead in applying these concepts to the operational environment and the adversary.

Operational intelligence is the critical element in the successful accomplishment of the operational tasks; know, plan and execute. It is the means of translating objectives from the strategic to the tactical level. Operational intelligence is the function providing essential data in the form of theoretical concepts such as centers of gravity, decisive points and the indirect approach in support of campaign planning. Additionally, operational intelligence is crucial to the execution of simultaneous and sequential operations, providing the operational commander with the intelligence needed to make critical decisions in accordance with the campaign plan. This is the nature of intelligence support to operational art. LTG Crosbie E. Saint summed up the importance of operational intelligence, "Our success at the operational level will largely depend on the intelligence community to rise to the challenge. The alternative is not acceptable."[110]

ENDNOTES

[1] Robert R. Glass, Intelligence is for Commanders (Harrisburg, PA: Military Service Publishing Company, 1948), foreword.
[2] Ralph L. Allen, "Piercing the Veil of Operational Art," Parameters 25 no. 2 (Summer, 1995), 112.
[3] Clayton R. Newell, The Framework of Operational Warfare (New York: Routledge, 1991), 9.
[4] Allen, 112.
[5] US Army, TRADOC PAMPHLET 11-9, Blueprint of the Battlefield (Washington, DC: Headquarters, Department of the Army, Final Draft, September, 1993), 4-1.
[6] Clayton R. Newell, "The Levels of War," Army 38 no. 6 (June, 1988), 27.
[7] US Army, Blueprint, 4-1.
[8] Robert M. Epstein, Napoleon's Last Victory: 1809 and the Emergence of Modern War (Ft. Leavenworth, KS: School of Advanced Military Studies, 1992), 8. (Course 4, History Readings)
[9] Newell, The Framework of Operational Warfare, 16.
[10] US Army, Blueprint, 4-1.
[11] Newell, "The Levels of War," 27.
[12] Clayton R. Newell, "What is Operational Art," Military Review 70 no. 9 (September, 1990), 16.
[13] James J. Schneider, Vulcan's Anvil: The American Civil War and the Emergence of Operational Art (Fort Leavenworth, KS: School of Advanced Military Studies, 1991), 30.
[14] Ibid., 5-34. The thoughts in this paragraph are a synopsis of Professor Schneider's thoughts captured between pages 5-34 concerning the development of operational art and maneuver.
[15] Scott A. Marcy, "Operational Art: Getting Started," Military Review 70 no. 9 (September, 1990), 108.
[16] John G. Burr, The Framework of Battle (New York: Lippincott Company, 1943), 167.
[17] Gerald D. Casper, Intelligence Support to the Operational Level of War (Maxwell AFB, AL: Air War College, May, 1988), 12-13.
[18] Joint Chiefs of Staff, Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington, DC: Department of Defense, 1994), 205.
[19] Joint Chiefs of Staff, Joint Pub 2-0, Joint Doctrine for Intelligence Support to Operations (Washington, DC: Department of Defense, 1995), GL-7.
[20] US Army, Field Manual (FM) 34-1, Intelligence and Electronic Warfare Operations (Washington, DC: Department of the Army, 1994), 2-2. Strategic intelligence-supports the formation of strategy, policy, and military plans and operations at the national and strategic levels. Operational Intelligence-supports the planning and execution of campaigns and major operations. Tactical intelligence-supports the execution of battles and engagements.
[21] Thomas F. Troy, "The Correct Definition of Intelligence," International Journal of Intelligence and Counter-intelligence, (Winter, 1991-1992), 437-438, quoting the US Commission on Organization of the Executive Branch of the Government (1953-1955), Intelligence Activities, A Report to Congress, 84th Congress, 1st Session, June 1955, H. Doc 201, 25-26.
[22] William S. Brei, Getting Intelligence Right: The Power of Logical Procedure (Washington, DC: Joint Military Intelligence College, 1996), 4 quoting Leo D. Carl, The International Dictionary of Intelligence (McLean, VA: International Defense Consultant Services, Inc., 1990), 178-195.
[23] Ibid., 4. CPT Brei defined intelligence as "knowledge of the enemy and the operational environment, both of which are processed and packaged for a specific customer's requirements for making decisions in matters of national security and operational execution."
[24] Glass, foreword.
[25] Joint Chiefs of Staff, Joint Pub 2-0, GL-8.
[26] Michael I. Handel, Intelligence and Military Operations (Portland, OR: Frank Cass and Company, Ltd., 1990), 1.
[27] Burr, 183.
[28] John Ferris and Michael I. Handel, "Clausewitz, Intelligence, Uncertainty and the Art of Command," Intelligence and National Security 10 no. 1 (January, 1995), 42. Reprint for elective course in Intelligence Policy and War (EL502) United States Naval War College, 1995-1996.

[29] Michael I. Handel, War, Strategy, and Intelligence (Totowa, NJ: Frank Cass and Company, Ltd., 1989), 187.
[30] Glass, ix.
[31] Handel, Intelligence and Military Operations, 1. Quoting Dr. R.V. Jones.
[32] Michael I. Handel, Leaders and Intelligence (Totowa, NJ: Frank Cass and Company, Ltd., 1989), 3.
[33] Frank B. Strickland Jr., "It's Not About Mousetraps-Measuring the Value of Knowledge for Operators," Joint Force Quarterly, Autumn 96 no. 13 (October, 1996), 92.
[34] US Army, FM 34-1, 2-7.
[35] Carl Von Clausewitz, On War, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 132.
[36] Steven Metz, and Frederick M. Downey, "Center of Gravity and Strategic Planning," Military Review 67 no. 4 (April, 1988), 23.
[37] Clausewitz, 595-596.
[38] William W. Mendel, and Lamar Tooke, "Operational Logic: Selecting the Center of Gravity," Military Review 73 no. 6 (June, 1993), 5.
[39] Clausewitz, 596-597. Clausewitz implies that centers of gravity exist at different levels of war by providing examples such as the army, capitals, alliances, public opinion, and political leaders.
[40] John D. Johnson, Sequencing Operations: Considerations for the Operational Planner (Ft. Leavenworth, KS: School of Advanced Military Studies, 1991), 15.
[41] Max G. Manwaring, Managing Contemporary Conflict (Boulder, CO: Westview Press, 1996), 52.
[42] Clausewitz, 117.
[43] Ibid.
[44] Michael I. Handel, Masters of War (Portland, OR: Frank Cass & Company, Ltd., 1992), 125.
[45] Sun Tzu, edited and translated by Samuel B. Griffiths, The Art of War (New York: Oxford University Press, 1971), selected excerpts from pages 96-106 concerning indirect maneuver.
[46] Marcy, 107.
[47] Ibid., 108.
[48] Ibid.
[49] Handel, Masters of War, 113.
[50] Ibid., 126.
[51] Johnson, 19 and Myron J. Griswold, Considerations in Identifying and Attacking the Enemy's Center of Gravity (Ft. Leavenworth, KS: School of Advanced Military Studies, 1986), 7.
[52] Antoine Henri Jomini, edited by Brig. Gen. J.D. Hittle, Jomini and His Summary of The Art of War contained in Roots of Strategy: Book 2 (Harrisburg, PA: Stackpole Books, 1987), 467-468.
[53] Ibid.
[54] Handel, Masters of War, 126.
[55] Jomini, 537.
[56] Victor M. Rosello, "Clausewitz's Contempt for Intelligence," Parameters 21 no. 1 (Spring, 1991), 109.
[57] Jomini, 539-540, and Handel, Masters of War, 129 and 132.
[58] Johnson, 21-22 and Griswold, 9. The analysis in this paragraph is a synopsis of my own thoughts with contributions from the passages of the authors listed.
[59] Marcy, 109.
[60] Richard M. Swain, "The Written History of Operational Art," Military Review 70 no. 9 (September, 1990), 101.
[61] Bruce Pirnie, and Sam B. Gardiner, An Objectives-Based Approach to Military Campaign Analysis (Santa Monica, CA: RAND, 1996), 94.
[62] Newell, "What is Operational Art," 4.
[63] Strickland, 92.
[64] Walter C. Kidney (editor), Webster's 21st Century Dictionary (Nashville: Thomas Nelson Publishers, 1995), 233.
[65] Allen, 114.
[66] Ibid.
[67] Clausewitz, 102.

[68] David Jablonsky, "Strategy and the Operational Level of War," Parameters 17 no. 1 (Spring, 1995), 66.
[69] Stephen E. Runals, "A Different Approach," Military Review 67 no. 10 (October, 1987), 47-48.
[70] Joint Chiefs of Staff, Joint Pub 3-0, Doctrine for Joint Operations (Washington, DC: Department of Defense, 1995), III-13.
[71] L.D. Holder, "A New Day for Operational Art," Army 35 no. 3 (March, 1985), 25.
[72] Ibid., 26.
[73] Joint Chiefs of Staff, Joint Pub 3-0, III-8.
[74] US Army, FM 100-7, Decisive Force: The Army in Theater Operations (Washington, DC: Department of the Army, 1995), 5-1 to 5-2.
[75] Ibid., 5-3 to 5-8.
[76] Runals, 45 & 47.
[77] Joint Chiefs of Staff, Joint Pub 3-0, II-2.
[78] Irving Heymont, Combat Intelligence in Modern War (Harrisburg, PA: The Stackpole Company, 1960), 1.
[79] Larry B. Buel, "Intelligence Preparation of the Battlefield," Military Review 67 no. 10 (October, 1987), 25.
[80] The definitions of intelligence and operational art come from the definitions used previously in this paper. See appropriate endnotes.
[81] Johnson, 3.
[82] Handel, War, Strategy and Intelligence, 95-96.
[83] Richard E. Simpkin, Race to the Swift (Maxwell House, Fairview Park, Elmsford, NY: Pergamon Press, 1985), 202.
[84] James V. Dixon, Intelligence at the Operational Level of War (Washington, DC: The National War College, 1986), 4-5.
[85] Crosbie E. Saint (LTG, USA), "Intelligence Requirements at the Operational Level of War," Military Intelligence PB34-87-1, Test (March, 1987), 6.
[86] US Army, FM 100-5, Operations (Washington, DC: Department of the Army, 1993), 6-9, and US Army, FM 100-7, 3-3.
[87] Paul Seabury and Angelo Codevilla, War, Ends and Means (New York: Basic Books, 1990), 187.
[88] Ferris, 42 & 49.
[89] Ibid., 53.
[90] Handel, Intelligence and Military Operations, 1-2.
[91] Seabury and Codevilla, 185.
[92] Newell, The Framework of Operational Warfare, 129.
[93] Saint, 6.
[94] US Army, FM 100-5, preface and 1-1.
[95] Joint Chiefs of Staff, Joint Pub 1, Joint Doctrine Capstone and Keystone Primer (Washington, DC: Department of Defense, 1995), 2.
[96] US Army, FM 34-1, 2-3, and US Army, FM 100-7, 5-17.
[97] Intelligence tasks identified in FM 34-1, Intelligence and Electronic Warfare Operations dated 1994 are; Indications and warning (I&W), Intelligence Preparation of the Battlefield (IPB), Situation Development, Target Development, Force Protection, and Battle Damage Assessment.
[98] US Army, FM 34-1, 2-17. This paragraph is a synopsis of information concerning the PIR portion of CCIR.
[99] US Army, FM 100-7, 5-17 to 5-19.
[100] US Army, FM 100-5, 6-7.
[101] US Army, FM 34-130, Intelligence Preparation of the Battlefield (Washington, DC: Department of the Army, 1994), 5-5.
[102] Joint Chiefs of Staff, Joint Pub 2-0, II-1.
[103] Ibid., IV-15. The attributes of quality intelligence in Joint intelligence doctrine are timeliness, objectivity, usability, readiness, completeness, and relevance.
[104] Ibid., VI-1 to VI-7. The functions of intelligence identified in Joint intelligence doctrine are planning and direction, collection, processing, and production.

[105] Joint Chiefs of Staff, Joint Pub 3-0. III-21
[106] Ibid.
[107] Ibid., III-1.
[108] Saint, 6.
[109] Mendel, 6.
[110] Saint, 7.

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