

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE (DD-MM-YYYY) 09-02-2004		2. REPORT TYPE FINAL		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE Effect of Modern C ² Assets on Risk Management of Joint Operational Warfare				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Lieutenant Commander Carlos A. Sardiello, USN Paper Advisor (if Any): Professor Albion. A. Bergstrom				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Joint Military Operations Department Naval War College 686 Cushing Road Newport, RI 02841-1207				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Distribution Statement A: Approved for public release; Distribution is unlimited.					
13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.					
14. ABSTRACT Technology has influenced the way Operational commanders approach Command and Control (C ²) of fielded forces within a battlespace. "Advances in technology, particularly information related technologies, offer military organizations unprecedented opportunities to significantly reduce the fog and friction traditionally associated with conflict." This Clausewitzian reference to "fog" refers to the uncertainties of the battlespace and most directly translates into risk to success of an operation. How a commander might leverage the benefits of C ² technology to control risk can have a profound effect on how effectively the operation is executed. The warfare concept of Network Centric Warfare (NCW) emphasizes a leveraging of advances in Information Technology (IT) to herald in, "a new era in warfare." But at the core of this new era, the human dimension should remain central since it largely distinguishes C ² . Judicious use of ever-advancing C ² assets (technologically) will contribute to the effective use of the devastating power of modern military force in support of a Joint (Coalition) operation to the fullest extent. The human element is key to success and needs to be preserved at all levels. Strategic and Operational commanders must focus on setting the conditions for success at their level and trust their component commanders and subordinate commanders whose role it is to be in contact with the adversary to utilize their situational awareness and professional experience in the most effective manner.					
15. SUBJECT TERMS Command and Control, Risk Aversion, Risk Management, VTC, Kosovo, Allied Force, Modern War.					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			Chairman, JMO Dept
				25	19b. TELEPHONE NUMBER (include area code) 401-841-3556

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Effect of Modern C² Assets on Risk Management of Joint Operational Warfare

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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09 February 2004

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Abstract of

Effect of Modern C2 Assets on Risk Management of Joint Operational Warfare

Technology has influenced the way operational commanders approach Command and Control (C²) of fielded forces within a battlespace. “Advances in technology, particularly information related technologies, offer military organizations unprecedented opportunities to significantly reduce the fog and friction traditionally associated with conflict.” This Clausewitzian reference to “fog” refers to the uncertainties of the battlespace and most directly translates into risk to success of an operation. How a commander might leverage the benefits of C² technology to control risk can have a profound effect on how effectively the operation is executed. The warfare concept of Network Centric Warfare (NCW) emphasizes a leveraging of advances in Information Technology (IT) to herald in, “a new era in warfare.” But at the core of this new era, the human dimension should remain central since it largely distinguishes C².

Judicious use of ever-advancing C² assets (technologically) will contribute to the effective use of the devastating power of modern military force in support of a joint (Coalition) operation to the fullest extent. The human element is key to success and needs to be preserved at all levels. Strategic and Operational commanders must focus on setting the conditions for success at their level and trust their component commanders and subordinate commanders, whose role it is to be in contact with the adversary, to utilize their situational awareness and professional experience in the most effective manner.

“Viewed in hindsight, the most remarkable thing about Allied Force was not that it defeated Milosevic, but that airpower prevailed despite a risk adverse U.S. leadership and an Alliance often held together only with paralyzing drag.”ⁱ

-“Lessons from the War in Kosovo”

Joint Force Quarterly, Spring 2000

INTRODUCTION

“Technological developments in electronics, communications, electro-optics and computer systems offer improved capabilities to accomplish the combatant commander’s mission.”ⁱⁱⁱ

Technology has influenced the way Operational commanders approach Command and Control (C²) of fielded forces within a battlespace. “Advances in technology, particularly information related technologies, offer military organizations unprecedented opportunities to significantly reduce the fog and friction traditionally associated with conflict.”ⁱⁱⁱ This Clausewitzian reference to “fog” refers to the uncertainties of the battlespace and most directly translates into risk to success of an operation. How a commander might leverage the benefits of C² technology to control risk can have a profound effect on how effectively the operation is executed. The warfare concept of Network Centric Warfare (NCW) emphasizes a leveraging of advances in Information Technology (IT) to herald in, “a new era in warfare.”^{iv} But at the core of this new era, the human dimension should remain central since it largely distinguishes C².

“C² – The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission.”^v

The very definition of C² evokes the personal nature of command itself, “especially the fact that it is vested in an individual who, being responsible for the direction and coordination, and control of military forces, is legally and professionally accountable for everything those forces do or fail to do.”^{vi} Variations in command style may be reflected by attributes such as the background and training of commanders, decision and orders style, risk tolerance and operational experience.^{vii} Regarding risk

tolerance, might a risk adverse commander attempt to mitigate some of that risk by exerting control across the entire strategic to tactical spectrum of warfare and to what effect? Milan Vego cautions against intervention by Strategic commanders:

“As new information technologies allow the higher command echelons to obtain a more complete picture of the events in a given theater of operations than was possible in the past, the temptation to intercede no matter how great should be avoided. Too much interference by the strategic level of command into the actions of the operational command echelon often does more harm than good.”^{viii}

This advice could well be applied at the interface between the operational and tactical level as well.

Judicious use of ever-advancing C² assets (technologically) will contribute to the effective use of the devastating power of modern military force in support of a Joint (Coalition) operation to the fullest extent. Recent Joint operations have been judged in the light of the overall success of the operation, albeit against adversaries of questionable relative capability. Future conflicts may not benefit from such a context in which the Operational commander has the luxury of time to exert C² at the tactical level. Taken to the extreme, tactical intervention by Operational commanders can be termed micromanagement. Operational commanders must be cognizant of the possible consequences of tactical micromanagement so that their use of modern C² systems will create both short and long term benefits vice problems.

The purpose of this essay is to detail an example of risk adverse tactical micromanagement enabled by modern C² assets via an illustrative case study on Operation Allied Force, Kosovo. In addition, this paper advances constructive recommendations for effective C² use in the future.

ANALYSIS

Above all, he identifies great military leadership with the readiness to take risks.^{ix}
- On War, Carl Von Clausewitz

Risk is the uncertainty with respect to gain or loss of an individual or group towards a particular opportunity.^x Risk taking is an inherent element of decision-making with increasing consequence directly proportional to the level of war. The Operational and Strategic commanders' decisions have a larger scope of effect than that of a Tactical commander and thus the responsibility of managing the uncertainty becomes even more important.

In managing uncertainty some have defined, the three components of risk to be magnitude, chance and exposure.^{xi} First it is necessary that there be a potential loss of some amount (magnitude). Second, there must be a chance of loss. Third, the notion "to expose" means the decision maker can take actions that can increase (or decrease) the magnitude or chance of a loss.^{xii}

A basic risk paradigm defines taking action as having two possible outcomes of a gain or a loss, each with a related probability. All risky situations have three identifiable determinants: lack of control, lack of information and lack of time. Risk mitigation is born out of controlling the three risk determinants.^{xiii}

<u>Determinant</u>	<u>Corrective Action</u>
i. Lack of Control-	Action to take control
ii. Lack of Information-	Action to resolve uncertainty
iii. Lack of Time-	Choose later and gain time

Simplification of the complexity of human decision making to a single model is unlikely.^{xiv} Nevertheless, many studies have been conducted regarding risk aversion being inherent to human nature. Some theorists have proposed that humans are risk

adverse with respect to losses.^{xv} As Jimmy Connors exclaimed, “I hate to lose more than I like to win.”^{xvi} Everyone to some extent, recognizes risks, evaluates the risks, tries to adjust the risks, and chooses among alternatives that differ in riskiness. How inclined individuals are towards accepting greater levels of risk varies greatly.^{xvii} Some characteristics of Risk Takers and Averters are summarized below:

- Taker-
 - Higher maximum, chance and exposure to loss acceptable
 - Control by others acceptable
 - Less information acceptable

- Averter-
 - Low maximum, chance and exposure to loss required
 - Control by self required
 - More information required

One way to look at a C² system is as a tool for risk reduction. Inherent in a C² system is its capability to provide mitigators to two of the risk determinants, namely lack of information and lack of control. A recently proposed theory defines successful use of a C² system to fulfill a basic purpose: To clearly convey the command concept.^{xviii} The command concept is a vision of prospective military operations that informs the making of command decisions during the operation.^{xix} A commander need not adopt a new concept until it is clear, through monitor of the C² system, that the information feedback refutes his concept (unsuccessful/unexpected results). In the modern C² environment, two of the commander’s options are to either adjust the command concept and monitor for improved feedback or continue with the current command concept and leverage technology to fill the gaps. If a command concept is acknowledged to be flawed but is the only way feasible then why not mitigate risk by using the C² system to exert greater control and gain more information? History suggests that preparation, not improvisation

and vision, not orchestration are the qualities that have most often carried the day in battle.^{xx}

“There is no such thing as a risk free military operation.”^{xxi}

-General Henry H. Shelton, Chairman Joint Chiefs of Staff

”Operation Allied Force, [NATO’s military action against Yugoslavia in the spring of 1999] was modern war: limited, carefully constrained in geography, scope, weaponry, and effects. Every measure of escalation was excruciatingly weighed.”^{xxii} “It was a war waged by a nineteen-nation alliance that habitually looked to the United States for leadership but ultimately made decisions on the basis of consensus and then delegated their implementation to a multinational military chain of command.”^{xxiii} Those are the words of then Supreme Allied Commander, Europe (SACEUR) and simultaneously, U.S. Commander in Chief, European Command (USCINCEUR), General Wesley K. Clark. He was dual-hatted with two different, geographically dispersed headquarters- NATO’s Supreme Headquarters Allied Powers Europe (SHAPE), near Mons Belgium, and the U.S. European Command (EUCOM), in Stuttgart, Germany- two different staffs, and two entirely different reporting chains. The Joint Task Force (JTF) Commander and Joint Force Air Component Commander (JFACC) commanders for JTF Nobel Anvil were also dual-hatted and headquartered at distributed locations. Admiral James O. Ellis, Jr., JTF Nobel Anvil, headquartered in Naples, Italy, served as Allied Forces Southern Europe and Lieutenant General C. Michael Short, JFACC, headquartered in the Combat Air Operations Center (CAOC), Vincenzo, Italy, served as the Combined Force Air Component Commander (CFACC).

The benefits of modern C² technology in Allied Force were unquestionable. “During Allied Force video teleconferencing (VTC) became indispensable as a battlefield synchronization tool and greatly improved communication at the highest levels.”^{xxiv} Both unity of command and speed of command were greatly enhanced via the daily VTCs as commander’s intent was expeditiously disseminated. Admiral Ellis later characterized the power of VTC as, “a powerful tool if properly used, owing to their ability to shorten decision cycle times dramatically, to communicate a commander’s intent clearly and unambiguously, and to obviate any requirements for the leading commanders to be collocated.”^{xxv} According to General Clark, “the most important new information technology application in the Kosovo operation was the joint broadcast system.”^{xxvi} This permitted VTC at multiple echelons around the clock.^{xxvii} There were sometimes as many as 3 to 4 VTCs conducted in one day mostly among the senior principals.^{xxviii} By Clark’s account, the typical battle rhythm seemed routine by the second day [Day two of Allied Force –25 March 1999]: morning meeting, NATO VTC, EUCOM VTC, press and media, follow-up.^{xxix} With regard to the NATO VTC, “the need for high-level discourse among NATO members is reflected in the Alliance’s definition of C³: consultation, command and control.”^{xxx} One detractor was that unwritten VTC guidance had the danger of being subject to misinterpretation as information and guidance filtered down to lower staff levels.^{xxxi} General Clark’s VTC guidance was never written down or distributed in any systematic way.^{xxxii} He also reportedly micromanaged the day-to-day execution of the Operation.^{xxxiii} “Clark had the option all along of leaving the day-to-day operational responsibilities of planning and implementing the air efforts to his JTF commander, Admiral Ellis, as the principal subordinate warfighting CINC.”^{xxxiv} Instead, Clark elected

not only to shoulder the diplomatic burdens as SACEUR, but also to conduct the air war himself from Brussels, in the process bypassing not only Admiral Ellis but his JFACC/CFACC, General Short, in making air apportionment decisions.^{xxxv}

Secretary of Defense (SECDEF) William S. Cohen's and General Shelton's post operation comments before the Senate Armed Service committee were telling of the fundamental flaws in Allied Forces C² structure and General Clark's use of VTC. "The Alliance's C² structure needs to be strengthened in a number of areas, including the contingency planning process, overarching command and control policy and procedure, and the Alliance's political military interfaces."^{xxxvi} These shortcomings were directly attributable to the Allied Force command concept and the manner in which the campaign was executed. A measure of whether or not the plan was working was evident from the fact that during the first month of bombing, 2 of the 3 stated strategic objectives (deter further aggression against the Kosovar Albanians and damage Serbia's capacity to wage war in Kosovo in the future) were abject failures.^{xxxvii} This is further reinforced by a private VTC convened by General Clark with his four-stars one week into the campaign. The meeting was to discuss fundamental issues such as, "What is the [desired] end state?", and, were the military objectives being accomplished and were they linked to the political objectives?^{xxxviii} The basic claim that air attacks won the war remains debatable. Skeptics can point to other factors that played a role: Russia's final abandonment of the Serbs, the softening of NATO's peace terms, the threat of a ground war, and the effectiveness of a NATO-supported KLA offensive. What does seem clear is that there were fundamental flaws in the Operation Allied Force's design and planning and required a great deal of effort to keep on track.

“We called this one absolutely wrong,” Admiral James. O. Ellis Jr. Commander Allied Forces Southern Europe and Commander Joint Task Force Commander Nobel Anvil, said in a postwar briefing to military officials. That “affected much of what followed... lack of coherent campaign planning... [and] the race to find suitable targets.”^{xxix}

A primary shortcoming in the contingency planning process was partially attributable to the unsuitable organizational structures and lack of staff integration.^{xi} Operating under the mistaken assumption that Allied Force would not have a ground option, a Joint Force Land Component Commander (JFLCC) was not appointed to JTF Nobel Anvil. This had two direct adverse consequences. The absence of a JFLCC in concert with the absence and an Airman advisor to SACEUR may have invited SACEUR micromanagement. Designation of, “a land component commander can provide valuable assistance in targeting field forces.”^{xli} Admiral Ellis commented regarding the lack of a designated CFLCC, “It also increased confusion by complicating planning and impeding an efficient operational chain of command.”^{xlii} “Commanders in Bosnia, and later Kosovo, complained that General Clark would micromanage, from his headquarters in Belgium, the tactical details of missions usually left to commanders on the ground. ‘It was tenuous at times,’ said Major General David L. Grange, who is retired now but who headed the First Infantry Division in Bosnia and Kosovo. ‘He did get into the weeds.’^{xliii}

“We started off allowing SACEUR to have tactical control of everything.”

-Colonel Holland, COS CAOC 5ATAF

A primary shortcoming in the overarching C² policy and procedure was partially attributable to the confused chain of command,^{xliv} which resulted in direct SACEUR

involvement in tactical targeting and tactical mission planning processes from day one.

“The initial VTC’s between SACEUR, the JFC, CFACC, CFMCC and other key players usurped the doctrinal model for target approval.”^{xlv}

“A typical exchange between Clark and Short during the air war’s early days would have Clark ask: “Are we bombing those ground forces yet, Mike?” To which Short would typically offer a noncommittal response. Even in the case of fixed infrastructure targets, Clark would reportedly venture deep into the most minute details of the target list... ..He would then raise questions about a target’s relevance, expostulate on allied sensitivities, or abort attacks already in progress. He would also sometimes gainsay his own intelligence experts and targeteers by looking at a particular DMPI placement and asking ‘Isn’t that an apartment building?’ or ‘Can’t we move that [DMPI] over 100 ft?’ At which point Short would be seen “slumping back in his chair, folding his arms in disgust, and mentally checking out....”^{xlvi}

While it is in the purview of the combatant commander to exert control at any level, by doctrine, the Joint Target Coordination Board (JTCCB) members are the DCJTF, J-2, J-3, JFACC, Component Liaisons and others as required.^{xlvii} The combatant commander’s or JTF commander’s interface ideally should consist of strategic guidance which results in the development of target sets from a Master Target List (MTL) and are approved based on desired effects and objectives.^{xlviii} JTCCB maintains a macro-level view of the theater and/or JOA and ensures that targeting nominations are consistent with JFC guidance.^{xlix} While SACEUR did not participate directly in the JTCCB, his requirement to personally review and approve each target in accordance with North Atlantic Council (NAC) guidance was redundant to the function the JTCCB and severely constrained the effectiveness and pace of the Allied air campaign.¹ The absence of a senior Airman to advise SACEUR directly affected tactical mission planning and invited specific employment guidance that is normal in the purview of the Tactical commander or

operator. “Many blamed the faulty target approval process on the notion that there was no assigned senior level US or NATO Air Force airman vigorously advising SACEUR.”^{li}

There was a difference of opinion between General Clark and General Short regarding whether the fielded forces in Kosovo or strategic infrastructure targets in Serbia should be the focus of the air campaign. While which target set was a more effective means of neutralizing Milosevic’s center of gravity is debatable, given the technology, constraints and environment, attacking fielded forces would only be marginally effective at best. General Short believed, in light of the absence of an Allied ground force which could flush out Serbia’s dispersed and hidden force in Kosovo, the infrastructure targets¹ in and near downtown Belgrade would be more effective in eroding Milosevic’s power base and persuade him to capitulate.^{lii} Absent of a NATO ground force, Allied tactical air strikes attempting to strike Serbian fielded forces were limited in effectiveness due to the lack of on-the-ground Forward Air Controllers (FAC) to provide targeting information and control. Airborne FAC could fill the role, but the initial ROE constrained aircraft to above 15,000 ft, a constraint strongly supported by General Short. The initial constraint to remain above 15,000 ft. was a prudent restriction in a heavy surface to air missile and AAA environment but was incongruous with the assigned mission at that time.^{liii} From that altitude, positive identification of potential targets was tenuous at best resulting in several incidents of unintended collateral damage.^{liv} The *Allied Force After Action Report to the U.S. Congress* comments, statistics show that

¹ Summary of an episode of disagreement recorded during a VTC: “In one exchange [between Clark and Short] that betrayed this deep disagreement, Short expressed satisfaction that, at last, NATO warplanes were about to strike the Serbian special police headquarters in downtown Belgrade.”

“This is the jewel in the crown,” Short said.

“To me, the jewel in the crown is when those B-52s rumble across Kosovo,” replied Clark.

“You and I have known for weeks that we have different jewelers,” said Short.

“My jeweler outranks yours,” said Clark.

only 60 percent of target-hit claims could be confirmed by the post-conflict assessment team.^{lv} The report also comments, “Serbia’s mobile Army and interior forces presented a targeting and damage assessment challenge.”^{lvi} A recommendation from the report stated a fix for the technology piece of the problem, “The department must also develop better sensors and communications to improve our capability to target an enemy’s mobile-fielded forces.”^{lvii} After General Short agreed to the ROE modification by late May, aircraft were frequently dipping down below 15,000 ft to positively ID targets before climbing to employ weapons.^{lviii} The tactical air effort became much more effective towards the war’s end. While the exact numbers may not be accurate, there is little doubt that attrition increased considerably towards the end of the war.^{lix 2} John Keegan commented, “There were really two campaigns [in Allied Force]: the first, lasting a month, which was a failure, the second, lasting six weeks, which was a success.”^{lx}

“Our lack of early successes gnawed at me, especially before each video teleconference, when I would ratchet up my determination to make an impact and take the command where it needed to go.”^{lxi}

- General Wesley Clark, SACEUR, USCINCEUR

SACEUR found himself working the minutia at the operator level:

“...working further down in the details than I would have preferred, in an effort to generate the attack effectiveness against the ground forces that I knew we needed. Can’t we keep the aircraft on station longer by letting them refuel again, while we wait for the weather to clear? Can’t you get more aircraft into the airspace by splitting it three ways instead of two, and stacking the aircraft overhead? Isn’t there some way we could entrap that SA-6, make him turn on this radar and take him down? Why can’t we use the AC-130 gunships from a greater range?”^{lxii}

Later in the campaign General Clark directed a goal of identifying a large and seemingly arbitrary number of targets that had no connection to Yugoslavia’s military capability.

Dana Priest, “United NATO Front was Divided Within,” The Washington Post, 21 September 1999, p A.01
² Better weather was also a factor in the improved success realized later in the campaign.

General Clark pressed his staff to identify 5,000 candidates [targets]. After his staff convinced him that 5,000 were not to be found he declared a new goal of 2,000, a goal later to be derided by some planners as “T2K”.^{lxiii} All of these fundamental questions induced unnecessary friction since they could have been answered by a senior Airman assigned to SACEUR’s staff. General Short described, “... SACEUR had no air expertise. Not that a two-star is not an expert [referring to himself] but you can’t go head to head with a four-star. There was no air expertise at the appropriate level. General John Jumper [four-star Commander of the U.S. Air Forces Europe], the senior airman in theater was several layers removed and physically absent from SHAPE headquarters.”^{lxiv}

“It was Clark’s liberal interventionism, very unusual for a general, which played a critically important role in the successful outcome.”^{lxv}

-Ambassador Richard C. Holbrooke

General Clark’s handling of Allied Force ultimately resulted in attainment of all Allied strategic goals despite extremely complex challenges. “We accomplished this by prosecuting the most precise and lowest-collateral damage air campaign in history—with no U.S. or Allied combat casualties in 78 days of around the clock operations and over 38,000 combat sorties.”^{lxvi} Such was the testimony of SECDEF Cohen and General Shelton to the Senate Armed Services committee on 14 October 1999.

Three reasons why senior decision makers such as SACEUR were involved at a level of detail normally reserved for operators were: “the risks were high, the payoffs tenuous and simply because they could.”^{lxvii} Allied Force was a prime example of a tactical situation with strategic implications. The military options available to SACEUR were constrained heavily by the political considerations required to maintain cohesion of the coalition. General Clark stated, “I was operating with the starting assumption that

there was no single target that was more important, if struck, than the principle of alliance consensus and cohesion,^{lxviii} Several NATO countries were initially reluctant to allow anything more than a phased operation in which a limited target set was to be considered and that each country would have a view on each proposed target. NATO's high level of risk aversion was due in large part to the overall lack of popular support among several NATO member countries for the intervention.^{lxix} General Klaus Naumaan, German Army, Chairman of the NATO military committee commented, "It is fair to say that the politicians of all NATO nations met most of our military demands and most of them did not embark on micromanagement of military operations." "My lesson learnt from that is that [future] coalition operations will by definition see some gradualism and possibly some delays in striking sensitive targets."^{lxx}

Allied Force was assumed to be limited in scope to a few days and thus afford the decision makers the luxury of getting heavily involved in the details. The belief that Milosevic would capitulate after a few days was reflected in U.S. interagency reports in January and February 1999, which argued confidently that "after enough of a defense to sustain his honor and assuage his backers [Milosovic] will quickly sue for peace."^{lxxi}

Regarding the personal conflict observed during the VTCS³, General Clark's perception was that he was not getting the action to strike mobile forces he desired and was simply asking questions to reiterate his priorities.^{lxxii}

³ Additionally, the internal friction evident in disagreement between General Clark and General Short on how each of them perceived a different Serb Center of gravity (COG) as the most effective means of attaining the strategic objectives was observed by subordinates as possibly personal vice serving a political constraint placed on him from above. "It was never clear to the participants whether General Clark, through such ex cathedra interventions, was genuinely responding to political pressure from above or was engaged in divide and rule game by playing punitive constraints to his advantage and gathering diverse inputs and opinions until he heard the one he wanted to hear." John A. Tirpak, "Short's View of the Air Campaign", Air Force Magazine, September 1999

Regarding the seemingly arbitrary number of targets, 2000, that General Clark requested, he justifies 2000 as, “a large round number, large enough to get us past the daily struggle over the number of targets approved for that day.”^{lxxiii}

To his credit, SACEUR direction during one VTC to “get down amongst them” and engage the Serbian ground forces in Kosovo, while well intentioned but misguided, displayed some propensity to take risk.^{lxxiv}

The zero defects mentality of modern warfare placed extra pressure on Allied Force leadership to conduct the operation with no collateral damage and zero friendly losses. “It can also be argued this preoccupation [by senior military officers with casualty aversion] directly influences the way military leaders establish and evaluate a military plan.”^{lxxv} The sensitive political situation was only exacerbated by several incidents of unintentional collateral damage. “The bombing of the Chinese Embassy had extremely negative political effects, and is perhaps the best example of both the reasons why the political context of targeting has now become critical, and the problems involved.”^{lxxvi}

Despite the increased situational awareness presented by the modern C² technology, General Clark, like any other individual, did admit to some personal limitations: “usually I acted on time-sensitive and incomplete information. My perceptions weren’t formed by full knowledge of all happenings above and around me.”^{lxxvii}

*“Nothing except a battle lost can be half so melancholy as a battle won”
-Wellington, Dispatches from Waterloo, 1815*

While Allied Force was deemed a success, the detailed evaluation of the execution was less than flattering. The characteristic result was, “a continuously evolving

coercive operation featuring piecemeal attacks against unsystematically approved targets.”^{lxxviii} Thus ensued from this commander’s concept, a total of 94 top-level VTCs conducted throughout Allied Force demonstrating personal conflict between senior leaders during the planning and execution of the operation.^{lxxix} It was noted in the *Allied Force After Action Report to Congress* that Operational commanders had something to learn about the use of VTCs. “In order to optimize the application of these systems and accustom Operational commanders to their effects, appropriate doctrine, tactics techniques and procedures must be developed.”^{lxxx} General Short displayed exceptional moral courage to state his opinion to General Clark on how the most effective use of Air Power could be utilized. He continuously pushed for options with the recognition that risks needed to be a taken and placed his trust in the capabilities of his subordinates. General Short’s push for changes to the command concept included such items as: the desire to strike strategic as well as tactical targets, desire to use overwhelming force vice gradual escalation, and the request for block-approval of target categories vice individual aim point review.^{lxxxi} He also displayed confidence in his pilots by assuming additional risk in personally accepting responsibility for the possible collateral damage his pilots might cause when engaging targets in close proximity to non-combatant structures.^{lxxxii}

RECOMMENDATIONS

“The widespread use of VTC and other advanced technologies for C² and collaborative planning presented numerous limitations and challenges. In order to optimize the application of these systems and accustom Operational commanders to their effects, appropriate doctrine, tactics techniques and procedures must be developed. In addition, these technologies should be included regularly in future large-scale and joint combined training exercises.”^{lxxxiii}

-Report to Congress Kosovo/Operation
Allied Force After-Action Report

The benefits of judicious use of C² assets by Operational commanders will be both immediate and in the future. Personality variations aside, walking the middle ground between techno-phobe and -phile and remembering that “the human user in the key element...”^{lxxxiv} will contribute to the effective use of a modern military force.

Today’s Benefits

Commanders should trust in their subordinates and concentrate on setting the conditions for success via attainable objectives that are communicated clearly and quickly. Trust is an essential element of risk management or the effectiveness of a fighting force may be diminished. A commander must leverage the experience and situational awareness of component commanders and subordinate commanders in the battlespace to execute command concept and provide feedback. Encouraging and rewarding appropriate risk taking at every level will help eliminate risk aversion and a zero-defects mentality.

A JTF should have a JFLCC regardless of whether or not ground forces are committed. A necessary dynamic is missing when peer level component commanders, each respectively in charge of the air, sea and land battle are not working in concert.

Commanders need advisors to represent all force-types assigned. A joint staff fails its commander if it cannot provide the insight required to most effectively employ the resources available for the operation.

Commanders should ensure their organizations are prepared to effectively utilize the available C² assets. Training and performance evaluation with the ever-advancing array of C² assets needs to be ongoing and regular. The increased access of senior

commanders to the tactical level of war and the resultant lessons learned in micromanagement can best be realized in exercises vice real-world contingencies.

Tomorrow's Benefits

Training as well as practical experience will aid in the development of future decision makers. Future leaders need to be able to think and fight at all three levels of warfare. Making the assumption one is compliant with micromanagement from above, what kind of decision-making skills is that individual going to develop and what kind of leader will they be in the future? Future C² systems strive to empower distributed nodes into action. More than ever, there is a need for leaders on the tip of the spear who can think on their feet. "Formal professional military instruction in recognition decision making must begin earlier in an officer's career."^{lxxxv}

CONCLUSION

"Control must be sufficiently tight to guarantee sufficient execution, but not to the point of undermining authority or stifling initiative."^{lxxxvi}

Increased clarity of commander's intent, enhanced situational awareness and faster decision making resultant from modern C² systems must be employed somewhere between the virtual commander's single-handedly commanding the entire Joint force and independent operation of Tactical commanders in the battlespace.⁴ While changes in the information environment have led some to focus solely on the contribution of information superiority to C², it is equally necessary to understand the complete realm of C² decision

⁴ Faulty military satellite links caused the failure of an MI-6 led operation to assassinate "Chemical Ali", a senior aide to Saddam Hussein. Secure satellite links to London broke down on the first day of Operation Iraqi Freedom and prevented British commanders from requesting permission from London. Government Ministers, who had to authorize the attack could not be reached for two hours. Michael Smith, "Faulty Phone Wrecked MI6 Bid to Kill Chemical Ali", London Daily Telegraph, January 8, 2004.

making... ..and especially, the “human in the loop.”^{lxxxvii} Finding that middle ground and training to it will enhance success in future conflicts regardless of scale.

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