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9. Personal Authors: George F. Franz, LCDR, USN

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15.Abstract: Network-centric warfare (NCW), through information superiority and shared awareness among networked forces, promises to one day provide "the ability to make better decisions faster and to implement them more quickly than any opponent can react." It may be distant future, but the U.S. is introducing the enabling information and communications technologies of NCW into its forces today. As a result, higher echelon commanders are presented with comprehensive displays of the battlespace and have the communications capability to personally direct individual units therein if desired. Will this opportunity fuel a shift towards more *centralized* command and control at the operational level?

While NCW technologies now enable the operational commander to exercise centralized command and control more effectively than ever before, decentralized command and control remains the best method for commanding U.S. forces. In addition, the operational commander should proactively address factors inherent to command during the Information Age that influence him toward centralization of his command and control processes.

This essay briefly traces the history of modern command and control, as well as the evolution of U.S. command and control doctrine to its current state favoring decentralization. It then analyzes, in light of technology advances, the pros and cons of centralized and decentralized command and control. Finally, it concludes by identifying and discussing several factors that currently encourage the operational commander to centralize command and control, and recommends potential approaches for addressing them.

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NAVAL WAR COLLEGE
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DECENTRALIZED COMMAND AND CONTROL OF HIGH-TECH FORCES – ALIGNING PRACTICE WITH DOCTRINE AT THE OPERATIONAL LEVEL

by

George F. Franz

Lieutenant Commander, USN

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.

Signature: _____

9 February 2004

INTRODUCTION

The advantage which a commander thinks he can attain through continued personal intervention is largely illusory. By engaging in it he assumes a task that really belongs to others, whose effectiveness he thus destroys. He also multiplies his own tasks to a point where he can no longer fulfill the whole of them.[i]

– Field Marshal Helmut von Moltke

Command and Control. Command and Control (C2) is defined as the means a commander uses to initiate, sequence, and synchronize elements of both combat and non-combat power.[ii] As such, its effectiveness is measured by how efficiently information flows up and down the chain-of-command and how rapidly orders are converted into appropriate actions at the scene of conflict. Network-centric warfare (NCW), through information superiority and shared awareness among networked forces, promises to one day provide "the ability to make better decisions faster and to implement them more quickly than any opponent can react."[iii] It may be distant future, but the U.S. is introducing the enabling information and communications technologies of NCW into its forces today. As a result, higher echelon commanders are presented with comprehensive displays of the battlespace and have the communications capability to personally direct individual units therein if desired. Will this opportunity fuel a shift towards more *centralized*[*] command and control at the operational level? Military history reveals that improvements in information and communications technology have often enticed commanders to exercise more centralized command and control. It is also replete with examples of how the inefficiencies of this method eventually led to defeat.

Thesis. While NCW technologies now enable the operational commander to exercise centralized command and control more effectively than ever before, decentralized command and control remains the best method for commanding U.S. forces. In addition, the operational commander should proactively address factors inherent to command during the

[*] See Appendix A for a discussion on the definition of centralized versus decentralized command and control.

Information Age that influence him toward centralization of his command and control processes.

Approach. This essay briefly traces the history of modern command and control, as well as the evolution of U.S. command and control doctrine to its current state favoring decentralization. It then analyzes, in light of technology advances, the pros and cons of centralized and decentralized command and control. Finally, it concludes by identifying and discussing several factors that currently encourage the operational commander to centralize command and control, and recommends potential approaches for addressing them.

Scope. The focus of this essay is U.S. operational level command and control in a technologically advanced force. Contemporary arguments regarding the relevance of the operational level and operational art in NCW are beyond its scope – joint command hierarchies contain an operational level today, and forward-looking joint doctrine seeks to "preserve the operational-level as the integrating joint force focal point."[iv] Additionally, it does not comment on the technical feasibility or likelihood of a successfully networked force in the future. The current state of technology is sufficient to warrant examination of the topic: "A commander at almost any level can apparently reach down and control the actions of an individual soldier at any time. Doing this, however, misuses the technology."[v]

A HISTORICAL FRAMEWORK

The "Stone Age of Command".[vi] Martin Van Creveld, in his book entitled Command in War, describes the period prior to 1800 as the "Stone Age of Command." Command was typically exercised by a single commander who, because of the primitive nature of communications, historically positioned himself at the location he believed would become the decisive point in the battle.[vii] Methods were consistent with centralized command and control and focused primarily on gaining accurate information about both enemy and friendly forces,[viii] but there were exceptions. Of note were the checkerboard formations of the Roman legions, led by field-grade officers, which could fight without

necessarily depending on orders from the commander-in-chief.[ix] In general, the scale of battles was such that a commander could see the entire battlefield and most of both armies, and conflict was usually completed within the span of a single day. However, by the time of Napoleon, the size and complexity of armies had begun to grow, requiring command of forces stretching beyond view in battles that lasted days at a time. This prompted Napoleon to develop his *corps d'armee* system to reduce uncertainty and complexity, although he still exercised highly centralized command and control of his forces.[x]

Auftragstaktik. Ironically, defeats at Jena and Auerstedt in 1806 by Napoleon's "modern brand of warfare" spurned an evolution in Prussian command and control principles that would continue throughout the nineteenth century. The introduction and development of the concept later called *Auftragstaktik* (literally "mission-tactics") was especially promoted by Field Marshal Helmut von Moltke, Chief of the General Staff of the Prussian Army from 1857 to 1888. Von Moltke wrote:

> Diverse are the situations under which an officer has to act on the basis of his own view of the situation. It would be wrong if he had to wait for orders at times when no orders can be given. But most productive are his actions when he acts within the framework of his senior commander's intent.[xi]

Among other things, *Auftragstaktik* signified the first formal emergence of "a command method stressing decentralized initiative within an overall strategic design"[xii] – decentralized command and control of forces operating within the framework of commander's intent. It has been fundamental to German command and control philosophy since 1914.[xiii]

The American Civil War. Historians call the American Civil War the "first modern war" because of the technology and weapons employed to fight it, as well as its representation of the transition between limited warfare in the eighteenth century to the total warfare of the twentieth century.[xiv] The U.S. saw examples of decentralized command and control emerge in this conflict as well. For example, when U.S. Army Lieutenant General

Ulysses S. Grant wrote to Major General William T. Sherman regarding his conduct of a spring campaign against the Confederacy in 1864, his guidance was simple:

> Get into the interior of the enemy's country as far as you can, inflicting all the damage you can against their war resources….I do not propose to lay down for you a plan of campaign, but simply lay down the work it is desirable to have done and leave you free to execute it in your own way.[xv]

Confederate Army General Robert E. Lee's orders to Lieutenant General Thomas "Stonewall" Jackson at the Battle of Chancellorsville are also cited as "classic mission orders that allowed subordinates to exercise their initiative."[xvi]

World War I. World War I became the bloodiest war to its point in history, largely due to the significantly more lethal weaponry produced as a result of industrialization. It was, for the most part, a step back from previous advances in decentralized command and control. Senior commanders "adopted the idea that warfare had become a science rather than an art."[xvii] They attempted to apply the successful management methods that spawned the Industrial Revolution, including "exhaustive planning, strict timetables, and tight control."[xviii] Hampered by poor communications, commanders planned operations and used tactics that allowed them to closely control the conflict themselves. Huge armies faced off against each other in brutal trench warfare, with results as poor as they were predictable.

World War II. In World War II, the failures of centralized command and control in World War I, as well as the defeat of the highly centralized French Army by the Nazis at the beginning of the conflict, led many U.S. Army commanders to again adopt more decentralized command and control.[xix] Arguably the strongest proponent of decentralization, General George S. Patton "acknowledged the exercise of initiative at all levels, notwithstanding individual judgment error, offered the best chance for victory."[xx] U.S. Navy Fleet Admiral Chester W. Nimitz would also be noted for exhibiting similar characteristics. However, World War II also witnessed the dawn of modern communications equipment, in the form of the field telephone and wireless radio. With the introduction and wide

distribution of this equipment to units in the field, the capability to centralize control of widely dispersed forces became reality, and the temptation was great. S.L.A. Marshall, in Men Against Fire, cites examples of headquarters in the Pacific theater exerting constant pressure on U.S. company commanders to report information and ordering them to take specific tactical actions based on the headquarters' estimates of the situation.[xxi]

The Vietnam Era. At the time, U.S. Army doctrine in the 1960's stated that the senior leader on the ground held the best perspective, and that commanders should lead from the front. However, in the Vietnam War, the use of helicopter command posts "gave airborne commanders the illusion of having perfect knowledge of the ground situation",[xxii] and lighter and more reliable communications "led them to believe they could reach down and influence the battle directly, rather than allowing their subordinates to do their jobs."[xxiii] Critics cite this particular phenomenon as a significant cause of weakness in the chain-of-command, an erosion of subordinates' trust in senior commanders, and an endemic reluctance to initiate action without orders from higher headquarters.[xxiv]

The air campaign in Vietnam also represents a prime example of the strategic level exercising centralized command and control over tactical actions. The civilian planners under Secretary of Defense Robert McNamara planned the execution of individual air strikes, to include "matters of target selection, weapons loads, and even approach routes and final target attack profiles."[xxv] The planners scheduled attacks to take place on specific days, "with no consideration given to such operationally critical matters as prevailing weather in the target area."[xxvi] President Lyndon Johnson and Secretary McNamara retained total control over the approval of targets, which they personally selected "during their Tuesday lunch meetings, without even an invited military presence until 1967."[xxvii]

A Shift to Decentralized Command and Control. Beginning in the 1980's, leaders who were junior officers in the Vietnam era and victims of the "Zero Defects" mindset that pervaded the military in the 1970's took the helm of the armed forces. As one historian put it, "enough of the officers who were disgruntled by the culture of looking good and ticket-

punching survived the system."[xxviii] The reforms they instituted placed "a new emphasis in leadership doctrine on trusting, respecting, and empowering subordinates."[xxix] The flavor of strategic leadership also changed during this period. For example, unlike President Johnson, when President Ronald Reagan ordered a retaliatory strike on Syrian air defense positions in Lebanon in 1983, he left the targets and the timing for the first major U.S. air strike since Vietnam completely up to the military.[xxx] Eventually these concepts were officially captured in Service doctrines, particularly by command and control philosophies that stressed decentralized execution. While the method a commander uses is both personality and situationally dependent, decentralized command and control is the method endorsed in U.S. Service doctrines today.

The Relationship with Business. The historical relationship between business management techniques and military methods of command and control should be considered as well. While management practices of the Industrial Age impacted command and control doctrine in World War I, it was business that adopted some of the tenets of military decentralized command and control in the 1980's. The "subordinate empowerment" movement in business was exemplified by anti-micromanagement books like best-sellers The One Minute Manager and Leadership Secrets of Attila the Hun. However, truly decentralized business practices dawned when the colossal mainframe computer gave way to networked workstations that spread the processing power throughout the company. Soaring computer processing power and storage capacity, combined with wildly plummeting equipment costs, allowed companies to streamline and reduce overhead. Processes were automated and networked information used to provide instantaneous transparency on inventory status, consumer preferences, and key cost drivers. Successful organizations harnessed the power of "Netcentricity," letting them downsize and reduce costs while simultaneously increasing productivity and customer satisfaction.[xxxi]

Notably, this success was not lost to forward-thinkers seeking to reapply the same principles to the military. They believe "network-centric operations deliver to the U.S.

military the same powerful dynamics as they produced in American business."[xxxii] NCW purists also assert that the "value of NCW lies in the increased knowledge of the battlefield now bestowed on individual war fighters at the tactical level. Thus, *decentralized* [emphasis mine] command and control should give forces an overwhelming advantage by allowing each individual war fighter to act on the information superiority provided by the network."[xxxiii]

CENTRALIZED VERSUS DECENTRALIZED COMMAND AND CONTROL

Military commanders have long recognized the absolute necessity of generating tempo in the decision and execution cycle. In a clash between two belligerents, the side that makes and implements sound decisions at a faster rate gains the initiative and holds a distinct advantage. Current U.S. doctrine of decentralized command and control generates swift decision-making cycles by pushing decision authority to lower echelons of command. Until now, this method allowed faster and more direct decisions for two reasons: lower-level commanders observing battlespace factors firsthand held information superiority over detached senior echelons, and the time penalty incurred passing detailed information up the chain-of-command and waiting for decisions to come down was avoided. In exchange for expediency of action, operational commanders accepted greater levels of uncertainty, the risk of sub-optimal decisions made at lower levels, and less stringent control over their forces.[xxxiv] However, in light of improved battlespace awareness and greatly expanded communications capabilities, a compelling case can be made that the grounds for decentralized command and control may no longer apply, and the tradeoffs are no longer required. The following analysis considers information superiority, experience of headquarters personnel, and the ability to exert tighter control over forces as key arguments for the increased centralization of operational level command and control.

Information Superiority. The modern headquarters receives and processes massive amounts of data from various sources, including all of the tactical units in the battlespace, reach-back sources not in theater, joint agencies, and sources with higher classification than

the "shooter" network. With these resources, it generates the most comprehensive common operating picture (COP) available. In a centralized command and control system, overall uncertainty is diminished at the higher echelons, and the commander can take advantage of information superiority to make optimal decisions and better orchestrate effects-based tactical efforts. The requirement for subordinate commanders to coordinate and synchronize their efforts is alleviated, and they need only precisely follow headquarters' commands.

Effective centralized command and control, however, is heavily dependent on the accuracy and completeness of the COP for decision-making. The sheer volume of raw data received by a headquarters threatens to overwhelm it as the critical node, and the data must be mined and irrelevant information filtered out for it to be useful in making decisions. As a natural function of automatic processing, in some cases "ambiguous, uncertain, fragmented, and contradictory data and indicators are cast off as uncorrelatable."[xxxv] It is also still one of the toughest challenges in the creation of graphic displays to accurately portray the degree of uncertainty that remains after the correlation process.[xxxvi] The implication is that information vital for making rapid decisions in a critical tactical level action might not even be displayed to the operational commander and his staff.[xxxvii] On the other hand, the presence of too much information may actually reduce understanding, causing it to take longer for the operational commander to reach the same decision that could have been arrived at in far less time.[xxxviii] Finally, the theoretical maximum number of combat actions a single individual can effectively manage simultaneously is five.[xxxix] Every decision is made in the face of some uncertainty, and in a centralized command and control system, the single engagement that flummoxes the central commander will impact his speed of command in all of the other situations he is controlling at the time.

In contrast, commanders under decentralized command and control use the COP to augment their own local battlespace situational awareness. When they receive it, lower echelon commanders can reduce their focus to those parts of the COP relevant to their individual operations, resulting in greater granularity in the information provided. They can

also better adjust to the breakdown or compromise of the headquarters' network or COP, either through cyber attack, electro-magnetic pulse (EMP), or other methods, because they do not depend on it for command and control. Rather than relying on information superiority to determine the optimal solution, the lower echelon commander uses the information he has to quickly find the first reasonable solution that solves the problem, and then rapidly moves on.[xl]

The contention that information superiority at the headquarters level will result in more effective actions at the tactical level is questionable on several points. Regardless of where the information superiority rests in an organization, it can never completely eliminate the fog and friction of war. More importantly, information superiority may increase the effectiveness of individual decisions, but it does not increase the tempo of the decision and execution cycle. The pace and scale of Operation Iraqi Freedom (OIF) was nearly seven times that of Operation Desert Storm,[xli] indicating that increasing tempo continues to be a critical requirement in the fluid environment of modern combat. As General Patton once said, "A good plan violently executed now is better than a perfect plan next week."[xlii] Decentralized command and control requires neither information superiority nor a detailed and accurate COP for lower level commanders to facilitate action, and it releases the operational commander to concentrate on orchestrating the effects of many combat actions, rather than the detailed command and control of just a few.

Experience of Headquarters Personnel. A headquarters will likely be manned by a commander and staff with a wealth of tactical and operational experience, who also have the luxury of brainstorming and weighing alternatives away from the combat environment. Centralized command and control readily allows this experience to be leveraged in decisions made regarding actions at the tactical level.

However, experience does not necessarily translate into a better understanding of the most updated equipment or tactics being used on the battlefield, or the situation at hand. It cannot replace the *fingerspitzengefühl* ("fingertip sense") held by commanders on the

scene.[xliii] This was demonstrated in OIF when "Battle commanders at the front, who had a first-hand sense for the cohesion or collapse of the enemy, were coming up with imaginative ways to circumvent the guidance coming down from higher headquarters."[xliv] Additionally, rigorously centralized command and control gives far fewer chances for subordinates to make decisions and gain experience for themselves. Valuable training opportunities for future operational leaders are wasted, leaving behind a "wake of inexperienced decision-makers"[xlv] as the commanders of the future. Likewise, unnecessary interference by seniors is not appreciated at the lower levels. As one commander warned, "The commander who reaches down to exercise command and control at subordinate levels will lose the support of his men and women."[xlvi]

As with information superiority, experience applied at the expense of delaying the decision is not worth the loss of tempo in the decision and execution cycle. Tactical commanders are highly trained in the missions they are assigned to accomplish. Officials commenting on Operation Enduring Freedom (OEF) have noted, "Afghanistan stagnation started when the Colonels and support staffs arrived in country."[xlvii] Decentralized command and control still affords subordinate commanders the opportunity to take advantage of the operational commander's experience in the form of a well-constructed commander's intent. All things considered, the experience at the headquarters level is more valuable when applied to the application of operational art, rather than to decisions at the tactical level.

Tighter Control over Forces. Centralized command and control, taking advantage of significant advances in communications technology, allows the operational commander to exert tighter control over the actions of his subordinate forces. This seems desirable, in light of the charged political nature inherent to the limited conflict and military operations other than war (MOOTW) the U.S. military most often conducts. However, the past few months in Iraq have also shown that these types of operations have the potential to be as unpredictable and deadly as total war.

As previously discussed, centralized command and control depends on a highly detailed and accurate COP. These operations, especially MOOTW, are often characterized by sketchy intelligence and rapidly changing situations, both cases in which the COP is unlikely to accurately track the tactical situation. Without good intelligence, networking forces to a superior centralized COP holds limited benefit, because there is very little information to put out on the net.[xlviii] Especially in these cases, a COP optimized for centralized decision-making may not fully support the requirements of commanders in direct control of weapons, whose needs are actually the most critical of all.[xlix] Wasted opportunities, or worse still, escalation of a situation or the loss of forces could result if decisions are delayed while headquarters waits for additional information that may never come. On the other hand, decentralized command and control allows subordinate commanders to freely respond to the entire range of circumstances they encounter. Potential exists to exploit fleeting opportunities and more quickly apply the appropriate force necessary to accomplish the mission. Allowing forces to operate in this flexible manner clearly requires effective communication and certain understanding by subordinate commanders of the operational commander's intent. Likewise, intensive training of forces is also required to ensure a single thoughtless action does not "undo months of patient work, potentially alienate the local populace, and benefit the belligerent's cause in stability operations or diminish the effects of support operations."[l] However, in situations where centralized command and control may result in inaction, commanders under decentralized command and control can generate an operations tempo the adversary is unable to match.

FACTORS ENCOURAGING CENTRALIZED COMMAND AND CONTROL

Decentralized command and control is therefore still the desired method from the aspects of increased tempo in the decision and execution cycle and flexibility in unpredictable situations. However, several factors brought about by the Information Age and force transformation also encourage more centralized command and control. These include

the impact of information on human nature, politics and the "CNN Effect", and the operational/tactical technology divide. The following section discusses the influence of these factors on the operational commander, as well as recommendations for addressing them.

The Impact of Information on Human Nature. Human nature is obviously timeless in its bearing on command and control. The choice between centralization and decentralization is largely a decision about the location of uncertainty in a hierarchy,[li] and the desire to skew command and control to alleviate one's own uncertainty is natural. However, the Information Age has perverted the human relationship with information. Our appetite for it has become insatiable, and today we expect instantaneous access and are exposed to unprecedented amounts. Surfing the Internet has become a national pastime, and human *curiosity* alone drives a great number of telecommunications requirements today.[lii] The boast made by U.S. Army Lieutenant General Joseph Kellogg Jr., director of C4I for the Joint Chiefs of Staff, after OIF is notable: "We could tell you, even in Washington, D.C., down to 10 meters, where our troops were"[liii] – interesting information, but not particularly relevant to the decisions strategic leaders and operational artists "surfing" in Washington, D.C. should be making.

It is human nature to second-guess the decisions of others given access to "identical" information, and in the same vein, humans tend to lead and act differently when they know they are being observed.[liv] Unfortunately, two undesirable characteristics of the COP are that it only appears to display the entire situation, and it is widely accessible, not just by the responsible chain-of-command, but outside of it as well. Pressure is added at each level of the decision-making process, because no one knows who is observing and second-guessing whom, or when. For the operational commander, information accessibility in concert with advanced communications makes it very easy to interfere in the tactical level. For example, Army General Tommy Franks, Commander, U.S. Central Command (CENTCOM), was known to occasionally provide personal direction to forces in both Afghanistan and Iraq. He issued orders based on real-time streaming video from PREDATOR unmanned aerial

vehicles (UAV's) he was watching in his U.S. headquarters.[lv] Furthermore, it is possible "the greatest threat to freedom of action at the operational level is the capability, through information technology, to overcentralize operations by the strategic level of command."[lvi]

Recommendations: Clausewitz wrote of the general, "What is required is a sense of unity and power of judgment raised to a marvelous pitch of vision."[lvii] Even as information technology has made it easier to micromanage subordinate commanders, the operational commander must clearly recognize and focus on his own role. It is his job to "think hard about the broader battlespace, about the objective of the overall operation, about the *what* as opposed to the *how*."[lviii] He is responsible for integrating logistics support and sustainment and all the other supporting functions with combat operations.[lix] Early reports from the latest conflict in Iraq indicate the Army's lead combat force was within two weeks of being halted due to a lack of spare parts.[lx] This may be attributable to poor integration of logistics considerations into the operational design of the ground war, an operational level responsibility.

Two ways the operational commander can reduce the urge to micromanage are with practice and by fostering trust in subordinate commanders. During every training opportunity, the operational commander should actively practice limiting his involvement in tactical level decisions, focusing instead on developing effective commander's intent. Conversely, he might also intentionally micromanage the tactical level sporadically, noting his reduced capacity to consider operational level matters. Trust in subordinate commanders should be fostered by first getting to know them – personal familiarity allows implied communications and mutual understanding. Trust is also built with reliable feedback from subordinates during the execution of their orders.

Politics and the "CNN Effect." Clausewitz also wrote, "The political object is the goal, war is the means of reaching it, and means can never be considered in isolation from their purpose."[lxi] Politics has always had an impact on the control of military forces. However, advent of the "CNN effect," synonymous for the influence of continuous real-time

news coverage[lxii] (another product of the Information Age), has dramatically changed the relationship between politics and the military. The extensive proliferation of the modern media results in the nearly real-time (and most recently, live) broadcast of U.S. military actions worldwide. Political leaders are expected to answer for these actions immediately,[lxiii] and they watch the TV as well. President George W. Bush was recently quoted as telling other world leaders, "I learn more from CNN than I do from the CIA."[lxiv]

From the politician's perspective, "a theater commander takes on the appearance of an 'on-scene' commander and is presumed to be engaging in a detailed management of the application of force."[lxv] The fact that politicians "are held accountable for tactical actions by a public media in real time,"[lxvi] as well as the development of a necessity to control public perception in the face of media spin, has resulted in unprecedented pressure from politicians on military leaders. Take for instance the case of U.S. Army General Wesley Clark, Supreme Allied Commander, Europe, during the Kosovo conflict in 1999. Having given a press conference in relation to NATO air attacks, he was called later that evening by fellow Army General Hugh Shelton, Chairman of the Joint Chiefs of Staff (CJCS), who relayed, "The Secretary of Defense asked me to give you verbatim guidance, so here it is: 'Get your f-----g face off the TV. No more briefings, period. That's it.'"[lxvii] To reduce the likelihood of his forces making a politically sensitive misstep, the operational commander may be tempted to exert more centralized command and control.

Recommendations: The operational commander must resist hamstringing his subordinate commanders by centralizing command and control in reaction to intense media scrutiny and political pressure. Even under centralized command and control, time-sensitive situations will arise that will compel subordinates to act without consulting the chain-of-command. Decentralized command and control, in concert with a clearly communicated commander's intent and simple rules of engagement (ROE), gives subordinates their best chance of reacting quickly and properly to unknown, unexpected, or rapidly changing circumstances.

As part of his responsibilities, the operational commander must work hard to predict the media and political reaction to events and how they might impact the desired strategic end state. Fully engaging the staff political advisor (POLAD) and public affairs officer can help foster an understanding of the dynamics in play. The operational commander should also establish himself as the primary conduit of accurate battlefield information for strategic military and civilian leaders. TV news is more rapid and direct than regular intelligence channels, but in the competitive rush to be first with a story, initial news reports are frequently inaccurate.[lxviii] There should be a plan in place for dealing with the media and remaining aware of how events are playing out on the TV. As Colin Powell advised, "Once you've got all the forces moving and everything's being taken care of by the commanders, turn your attention to television because you can win the battle or lose the war if you don't handle the story right."[lxix] Finally, as part of the operational design, methods for incorporating the media into deception plans, psychological operations (PSYOPS), and as an intelligence resource should be considered.[lxx]

The Operational/Tactical Technology Divide. It is currently not feasible to simultaneously develop all of the operational and tactical architectures required for seamless joint command and control.[lxxi] While some new technologies have been introduced at the tactical level, Blue Force Trackers (BFT) for example, more significant efforts have initially been directed at the operational level joint command and control (JC2) architecture and its associated equipment. The situation is worsened at the low end by Service-centric funding and acquisition processes which have consistently failed to emphasize joint integration requirements.[lxxii] Lack of communications interoperability between Services was demonstrated on the front lines in OIF when a Marine and an Army battalion, only a kilometer apart, were unable to communicate with each other electronically because of incompatible equipment.[lxxiii]

The impact of the technology gap between the operational and tactical levels was demonstrated in OIF as well. In contrast to the Marine and Army battalions described above,

the OIF Coalition Forces Land Component Commander (CFLCC) was "able to talk via tactical satellite communications and other means across a battlespace of hundreds of miles."[lxxiv] Lieutenant General William Wallace, commander of the U.S. Army forces, reported that, "Despite all the incredible products at the disposal of my assault command post, we could not get relevant photos, imagery or joint data down to the soldier level in near-real time."[lxxv] Someone wryly coined the phrase "self-licking ice-crème cone" to describe high-level staffs passing digital data back and forth to make them feel they were in the know, while those on the ground moving forward had none.[lxxvi] A greater capability to process data and communicate at the higher echelons reduces uncertainty at the top but increases uncertainty at the lower echelons, either because they do not have the same information or they receive it much later. This technology divide encourages centralized command and control.[lxxvii]

Recommendations: During joint exercises the operational commander and his staff should take every opportunity to identify and document the technology limitations and interoperability deficiencies that hamper effective decentralized command and control. Systems which rectify these problems should subsequently place high on the commander's input to the planning, programming, and budgeting (PPB) process. While correction of these problems is iterative, it is absolutely essential. In the near future, "plug and play"[lxxviii] joint forces will be "assembled with minimal time for planning, coordination and training across service functional boundaries in ad hoc configurations for a wide assortment of diverse operational objectives."[lxxix] The extent to which the operational commander is able to execute decentralized command and control these forces will significantly impact the overall tempo of operations they are able to generate.

SUMMARY

It is not enough to erect the networks; full realization of NCW will require cultural change.[lxxx]

– Vice Admiral Arthur K. Cebrowski

Decentralized command and control is rooted in U.S. Service doctrine as a result of the historical failure of centralized command and control. However, the information and communications technologies being introduced into the forces today enable the operational commander to exercise centralized command and control more effectively than ever before. Certain arguments for this technique seem compelling, but the improvements in technology are once again merely swirling the fog of war, not eliminating it. A thoughtful analysis of centralized versus decentralized command and control reveals by virtue of greater tempo in the decision and execution cycle and flexibility in unpredictable situations, decentralized command and control is still the superior method.

Today's operational commander must resist the historical urge to use technology to execute more centralized command and control. More so, he must proactively address the factors brought about by the Information Age and force transformation which encourage him to do so. When the operational commander routinely exercises centralized command and control, he wastes his capacity to consider and orchestrate the other elements at the operational level that may be brought to bear in a situation. The consequences are aptly summarized: "Each level of war is complex, and if a decision-maker abandons his level even briefly to make decisions at a lower level, effectiveness will be lost."[lxxxi] Even more so, in battle against a potent enemy, the consequences could be disastrous.

NOTES

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APPENDIX A

COMMAND AND CONTROL TERMINOLOGY

As shown in table 1 below, the various U.S. Services are not standardized in the terminology they use to describe different forms of command and control. To eliminate confusion, this essay will use the terms *centralized command and control* and *decentralized command and control*. Centralized command and control will describe a model that centralizes decision making authority, relies on strict obedience and minimal decision making in lieu of initiative by subordinates, and achieves unity of effort through "detailed, prescriptive techniques."[lxxxii]

On the other hand, decentralized command and control is a model where seniors delegate decision authority and grant freedom of action to their subordinates to the maximum extent feasible. This permits (and requires) the subordinates to exercise initiative in completing their missions. Seniors prescribe the methods of execution only to the extent required to facilitate coordination, and intervene in a subordinate's execution of the mission only by exception.[lxxxiii] The goal of decentralized execution is to increase operations tempo by empowering subordinates with the flexibility to deal at their level with rapidly changing or unforeseen circumstances during mission execution. As such, the commander accepts a higher level of uncertainty "in the interest of better results at the scene of action."[lxxxiv] The commander establishes unity of effort and a common vision among distributed command elements by formulating and clearly communicating his commander's intent. The commander's intent is a concise and unambiguous statement of what the force must do and the conditions the force must meet to achieve the desired end state.[lxxxv]

TABLE 1: SERVICE COMMAND AND CONTROL TERMINOLOGY

	COMMAND AND CONTROL MODEL DESCRIBED	
SERVICE	CENTRALIZED	DECENTRALIZED
Army[lxxxvi]	Detailed command	Mission command
Navy[lxxxvii]	Detailed control	Mission control
Marines[lxxxviii]	Detailed command and control	Mission command and control
Air Force[lxxxix]	Over control	Decentralized execution

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[lxxxix] Department of the Air Force, Air Force Doctrine Document 2-8, (Washington, D.C.: September 1999 – approval pending). <http://www.global security.org/military/ library/policy/usaf/afdd/afdd2-8.pdf> [17 January 3003]. Unlike the other services, the Air Force doctrine describes a single preferred command and control doctrine: centralized control, decentralized execution. It then discusses the balance between too much and too little centralized control using the terms “over controlling” and “under controlling.”