

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 06-11-2007		2. REPORT TYPE FINAL		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE Centralized Execution: A necessary challenge to joint doctrine.				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) LCDR Mark S. Leavitt Paper Advisor (if Any): Professor Peter Dutton and Captain Mike Husak				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 Naval War College faculty in partial satisfaction of the requirements of the Joint Military Operations 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 "Centralized planning/Decentralized execution" is a widely accepted mantra of joint doctrine, written into nearly every joint pub and considered vital in our ability to fight high tempo maneuver warfare. This doctrine seems to be under attack by the influence of technology, a concern plainly addressed in our joint doctrine. Identifying the reasons behind the drift of operational command and control away from decentralized execution provides an opportunity to examine some of the assumptions that are part of this accepted way we fight wars. Technology has always driven changes in the way war is fought as much as it has driven changes in weapons themselves. While decentralized execution still holds immense military value, changes brought about by technology and the environment we operate in have created necessary instances of centralized execution by operational commanders. Understanding these changes, and controlling or adapting to them, are necessary to maintain effective joint doctrine.					
15. SUBJECT TERMS Joint Doctrine, Decentralized Exection, Centralized, Planning, Direction, Technology, Counter-insurgency, Operational Commander					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 17	19a. NAME OF RESPONSIBLE PERSON Chairman, JMO Dept
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			19b. TELEPHONE NUMBER (include area code) 401-841-3556

**NAVAL WAR COLLEGE
Newport, R.I.**



Centralized Execution: A Necessary Challenge to Joint Doctrine

by

**Mark S. Leavitt
LCDR, 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: _____
06 November 2007**

Abstract

“Centralized planning/Decentralized execution” is a widely accepted mantra of joint doctrine, written into nearly every joint pub and considered vital in our ability to fight high tempo maneuver warfare. This doctrine seems to be under attack by the influence of technology, a concern plainly addressed in our joint doctrine. Identifying the reasons behind the drift of operational command and control away from decentralized execution provides an opportunity to examine some of the assumptions that are part of this accepted way we fight wars. Technology has always driven changes in the way war is fought as much as it has driven changes in weapons themselves. While decentralized execution still holds immense military value, changes brought about by technology and the environment we operate in have created necessary instances of centralized execution by operational commanders. Understanding these changes, and controlling or adapting to them, are necessary to maintain effective joint doctrine.

Table of Contents

Introduction	1
A discussion of “Centralized Planning/Decentralized Execution”	3
Data, Information, and Knowledge	6
“Informationization” makes it easy	7
Why Plan when you can execute?	10
The strategic impact of tactical actions	12
Conclusions	14
What Next?	16
Bibliography	18

Introduction

“Where is RPT where is Task Force thirty-four, the world wonders.”¹ This most famous of quotes from Admiral Nimitz flowed through a High Frequency radio network that was capable of transmitting data at a maximum of 300 bits per second.² Today, Wideband Global Satellite communication supports military communication requirements at a rate of 2.4 to 3.6 giga-bits per second.³ Translated into comparative terms, we can move more than 3 billion times the amount of data per second today than we could during World War II.⁴ There are many implications of the rapid expansion of technology on joint force employment. From food service to fire control, technology has made the business of war more efficient and effective. Operational command and control, in particular, has experienced remarkable advances as computing and communications technology develops in sophistication and applicability.

As the United States Military becomes more “wired” the joint force commander is driven to exercise greater control over subordinate execution. Vastly expanded access to battlefield data through advances in networking, intelligence gathering, and communications have fundamentally altered how a commander employs operational command and control. His ability, not only to know, but also to rapidly affect in real time how tactical units are executing a mission based on his commander’s intent is a powerful draw towards more centralized control. While broadly applied technology certainly holds immense value in its ability to further decentralize execution, “evidence suggests the opposite: theater commanders increasingly use information technology to make decisions that would normally

(All notes appear in shortened form. For full details, see the appropriate entry in the bibliography.)

1. Potter, *Nimitz*, 340.

2. Canty, interview.

3. Keggler, “The Wider the Band,” 46.

4. Tech Target, “IT-specific encyclopedia,” whatis.com.

be the province of tactical commanders.”⁵

“Centralized planning/Decentralized execution” is a widely accepted mantra of joint doctrine, written into nearly every joint publication and considered vital in our ability to fight high tempo maneuver warfare. This doctrine seems to be under attack by the influence of technology, a concern plainly addressed in our joint doctrine. As Joint Publication 1-0 points out, “These technological advances increase the potential for superiors, once focused solely on strategic and operational decision making, to assert themselves at the tactical level.”⁶

Identifying the reasons behind the drift of operational command and control away from decentralized execution provides an opportunity to examine some of the assumptions that are part of this accepted way we fight wars. Technology has always driven changes in the way war is fought as much as it has driven changes in weapons themselves. While decentralized execution still holds immense military value, changes brought about by technology and the environment we operate in have created necessary instances of centralized execution by operational commanders. Understanding these changes, and controlling or adapting to them, are necessary to maintain effective joint doctrine.

The first step in this discussion of operational command and control is to build a clear understanding of some key concepts. The phrase “centralized planning and decentralized execution” appears in many different forms and with many different meanings throughout joint doctrine and in an enormous volume of academic media. Eliminating the confusion behind this term is vital to the discussion. Further, the terms ‘data’, ‘information’, and ‘knowledge’ are used throughout writings on command and control. They are not interchangeable and should be clearly understood before starting the main thrust of the

5. Vego, “Operational Command and Control in the Information Age,” 102.

6. JP 1-0, *Doctrine for the Armed Forces of the United States*, IV-15.

argument. Once those foundations are complete, the impact of technology on a commander's willingness to centralize execution will be examined through three primary areas of influence. First, quite simply, technology has made it easier to for a commander to control execution. Second, technology provides vastly increased awareness of a plan's success or failure during execution, allowing for near continuous modification to achieve objectives. Finally, technology feeds a commander's desire for awareness of tactical actions that may have strategic effects. Pulling these areas together will show the relentless push of technology towards more centralized execution. However, the importance of the current doctrine of "centralized planning/decentralized execution" should not be written off as lost in the ethernet. Important changes can and should be made to keep decentralized execution part of our foundational doctrine for operational command and control. This leads back to the first and perhaps most vital step of analysis – what do centralized planning and decentralized execution mean?

A discussion of "Centralized Planning/Decentralized Execution"

Joint Publication 1-0, "Doctrine for the Armed Forces of the United States" provides no concise definition for this term. It is addressed through general discussions of command and control or as it applies to other terms. However, its importance is addressed throughout joint doctrine. It is most directly mentioned in conjunction with unity of effort.

"Centralized planning and direction is essential for controlling and coordinating the efforts of the forces. Decentralized execution is essential because no one commander can control the detailed actions of a large number of units or individuals."⁷ Although it seems the norm throughout military texts to use the term "centralized control and decentralized execution", this term is not mentioned in joint doctrine. Centralized control is a term referenced almost

7. JP 1-0, *Doctrine for the Armed Forces of the United States*, V-2.

exclusively with respect to Air and Space power. In fact, the joint definition of centralized control is: “In air defense, the control mode whereby a higher echelon makes direct target assignments to fire units. In joint air operations, placing within one commander the responsibility and authority for planning, directing, and coordinating a military operation or group/category of operations.”⁸ Throughout joint and individual service publications, the emphasis is on air power alone when using the term centralized control, while centralized planning and direction seems to be the accepted reference to joint doctrine for general command and control. To further cloud the debate, Navy command and control doctrine only mentions decentralized execution,⁹ while Marine doctrine espouses “centralized planning” and “decentralized execution.”¹⁰ Surprisingly, the terms are not addressed in the Army’s doctrine publication. Perhaps this is splitting hairs, but it seems that the only point the services can agree on is decentralized execution, the “delegation of execution authority to subordinate commanders.”¹¹

While there is some room for debate, the term “centralized planning and direction and decentralized execution” should be used as the basis for discussion of operational command and control. Based on the frequency with which those terms appear and the fact they are used in the lead joint doctrine publication one can assume that the services came to some consensus on their use to capture a doctrinal tenet of command and control. This doctrine is a vital part of how the United States military operates. “Unity of effort over complex operations is made possible through decentralized execution of centralized, overarching

8. JP 1-02, *Dictionary of Military and Associated Terms*, 81.

9. NDP 6, *Naval Command and Control*, 37.

10. MCDP 1-0, *Marine Corps Operations*, 3-5.

11. JP 1-02, *Dictionary of Military and Associated Terms*, 145

plans.”¹²

Many authors will use the word “control” interchangeably with, or instead of, the term “planning and direction,” however these terms have very different implications. Control carries with it much stronger connotations of supervision and direct involvement in decision making. Direction implies a broader concept of guidance and application of the commander’s intent. Perhaps the clearest example of the blurred distinction between control and direction is found in Navy doctrine.

As a form of mission control, the commander uses mission-type orders as a tool to decentralize execution. Mission-type orders specify the objective to be obtained or the end state desired, and the purpose for attaining it. In this way, mission-type orders direct a subordinate to perform a certain task without specifying how to accomplish it. The senior leaves the details of execution to the subordinate, allowing him the freedom, and the obligation, to take whatever steps are necessary to deal with the changing situation. This freedom of action encourages the initiative needed to exploit the volatile, disorderly nature of combat.¹³

This paragraph appropriately describes the value of decentralized execution while unintentionally capturing the thin, but important, distinction between the concepts of centralized control and centralized direction. Out of this confusing mess of joint and service publications, one constant of command and control is clear: the doctrine of centralized planning and direction and decentralized execution exists to support both unity of command and unity of effort. This aspect of command and control is, unfortunately, not the only confusing one. Data, information, and knowledge are key terms in command and control yet they are frequently confused or interchanged. Clearly establishing their meaning and importance to the debate over technology’s influence on command and control is a necessary step.

12. JP 1-0, *Doctrine for the Armed Forces of the United States*, xvi

13. NDP 6, *Naval Command and Control*, 55.

Data, Information, and Knowledge

Effective command and control relies on decision making that is supported by accurate knowledge of the situation. The process of generating knowledge from raw data is integral to an effective command and control system - synthesizing that raw data into information, then interpreting the information to generate knowledge of the situation. “An ideal command system, then, should be able to gather information accurately, continuously, comprehensively, selectively, and fast. Reliable means must be developed to distinguish the true from the false, the relevant from the irrelevant, the material from the immaterial.”¹⁴ This process feeds directly into the concept of decision superiority. “Information superiority provides the joint force a competitive advantage only when it is effectively translated into superior knowledge and decisions. The joint force must be able to take advantage of superior information converted to superior knowledge to achieve ‘decision superiority’ – better decisions arrived at and implemented faster than an opponent can react.”¹⁵

A similar view of the importance of data, information, and knowledge is found in a fairly recent Chinese military concept. Referred to as the “informationization of warfare”, the Chinese see the clear importance and convergence of computer network operations, intelligence, surveillance, and reconnaissance capabilities, communications, and other information technology systems. These new technologies and the processes and organizations to effectively use them are fundamentally important to their development of an effective military.¹⁶ The term informationization, while clumsy, seems to accurately capture the process of translating raw data into the ‘decision superiority’ that we seek.

14. Van Creveld, *Command In War*, 8.

15. Joint Vision 2020, 11.

16. Chaisson, “China report looks at ‘informationization’,” 20.

“Informationization” makes it easy

Perhaps the clearest reason joint force commanders exercise greater control over subordinate execution is the simple fact that technology and organization have made it easier to do. The history of command and control in warfare is built on the constant development of methods for commanders to keep control of ever growing force structures despite greater dispersion and more rapid movement.¹⁷ These methods did not solely develop around communication advances. In fact, some of the farthest reaching and most important were in organizational structure. Certainly the development of the radio was a significant event in command and control, but consider the Romans’ creation of standardized formations and the creation of a command staff to bring organization to the problem of command and control.¹⁸ Adding to the command and control problem, the increasing lethality of the weapons with which we fight pushes our forces towards greater dispersion to counter that lethality.¹⁹ Another element influencing the dispersion of forces is the implementation of the Joint Force Command concept. The problem of command and control is multiplied beyond just the dispersion of a single type of force in battle and now encompasses the spread of all the service components, each with their own embedded organization, command structures, and missions all spread over wide geographic regions. Technological advancements in command and control have tried to keep pace with these challenges. “The history of command can thus be understood in terms of a race between the demand for information and the ability of command systems to meet it.”²⁰

The constant development of technology has brought us to a unique point in the

17. Van Creveld, *Command In War*, 53.

18. Ibid, 56.

19. Bass, *Decision Loops: The Cybernetic Dimension of Battle Command*, 1.

20. Van Creveld, *Command In War*, 265.

history of command and control. While we are still certainly in the race between demand and ability, our command and control systems provide data and information at levels unheard of in the past. Today's operational commander benefits from developments in the speed of data flow, the amount of data flow, the dispersion of sensors, and the creation of a staff organization built around translating an enormous amount of data into information that can be interpreted for knowledge and, from that, decision superiority. The architecture in which this capability resides provides the commander not only the ability to gain precise tactical detail, but also to communicate directly back to the tactical level. Command and control systems provide two way data flow as never before. Upstream data flow has always started with the individual unit in battle, be it a foot soldier, a tank, or an aircraft. However, in the past data from these individual units had to wait to be assimilated by higher echelons before moving up to the operational level where it was fed into the decision loop. "Military maxims hold that the best intelligence information comes from soldiers in contact and that reports from these engagements flow up the chain of command, being filtered and consolidated at each echelon along the way."²¹ This stepped consolidation of data was due in large part to either the lack of communications systems or their incompatibility at lower levels. Technology is breaking down this barrier.

Consider the Army's experimental Land Warrior system. In Iraq now with 4th Battalion, 9th Infantry Regiment, 2nd Infantry Division's 4th Stryker Brigade Combat Team,²² each soldier carries a Raytheon Microlight radio which transmits data at rates up to 1 mega-bits per second.²³ Using the earlier Nimitz comparison, the average foot soldier can now communicate at almost 1 million times the rate of the Pacific Ocean Area Commander

21. Campen, "Communications support to Intelligence," 52.

22. Lowe, "Land Warrior Proves Itself in Combat Ops," military.com.

23. Raytheon Corporate data sheet for Microlight-I hands free radio system, Raytheon.com, 2.

during World War II. The implications of this tremendous capability go far beyond their current tactical application. Joint Vision 2010 hinted at this capability with the comment that “commanders at higher echelons will use these technologies to reduce the friction of war and to apply precise centralized control when and where appropriate.”²⁴

That this linked capability exists in our larger war fighting platforms (tanks, ships, aircraft) is fast becoming an assumption. However, pushing this link down to the individual foot soldier brings the operational commander’s ability to communicate across his forces to an unprecedented level. Data flow can accelerate from its point of origin to the operational decision maker at the speed of satellite communications, with decisions being transmitted back down at the same rate. As technology advances, the barriers to this flow become only what the echelons of command in between artificially erect to manage that data flow.

A Joint Force Commander picking up the radio to speak directly to an Infantry Sergeant on a mission is certainly taking this analogy to an unwanted and unheard of extreme. However, the likelihood that someone on his staff will either be monitoring or communicating directly with the actual forces in contact will only increase as the communication nodes push down the chain of command. If the operational commander wants decision superiority, it is his staff that is working to provide it.

“Introduced to assist a commander in acquiring and processing information from across the span of responsibility, developing courses of action, and communicating the commander’s orders to the field,”²⁵ a staff is the component of the command and control system that creates information from data and knowledge from information.²⁶ Staffs are growing in intricacy and size to support the complex command and control problem that

24. Joint Vision 2010, 15.

25. McClure, *Technology and Command: Implications for Military Operations in the 21st Century*, 5.

26. Joint Vision 2020, 37.

commanders are faced with – expanded capabilities and varieties of force, expanded operating areas, and significantly contracted timelines. During Operation ALLIED FORCE, the Air Operations Center working for the Air Component Command of the Joint Force had a staff of roughly 1300 people, not to mention the considerable amount of computer and communications support equipment that went with it.²⁷ Bear in mind this staff was designed to control only a particular aspect of the Joint Force. Concerns over information overload due to the sheer size of the command and control problem and the dramatic increase in data flow are being met not only by further advances in technology, but also by a considerable increase in the size of staffs.²⁸

The advance and application of technology has pushed the boundary of rapid data flow to the lowest level in the history of warfare. The operational commander who, in the past, was relegated to messengers on horseback from the highest point of the battlefield for command and control can soon communicate with nearly all his forces by radio or computer.²⁹ Surrounding the commander is a staff organization built to provide precise tactical knowledge so that he can make superior operational decisions. This has created a circumstance where it is now easier than ever for the operational commander to reach down and influence tactical actions in order to reach operational objectives. The impact of this influence on execution has tremendous consequences for the operational planning process.

Why plan when you can execute?

Operational planning is an iterative process. Each cycle is altered based on the execution of the previous one. As the speed of conflict accelerates, this process must

27. U.S. Department of Defense, *Operation Allied Force After Action Report*, 45.

28. Vego, "Operational Command and Control in the Information Age," 623.

29. Van Creveld, *Command In War*, 53.

necessarily accelerate to keep pace.³⁰ As the planning process reaches the limits within which it can be completed it is abandoned and control of execution overcomes the plan in order to achieve the commander's intent. In essence, decentralized execution allows an effort to continue when the elements have reached the limit of the plan. Conversely, decentralized planning can take over where the operational plan leaves off when the complexity of conflict overwhelms the ability of an operational commander to develop current plans. In either case, the propensity of the operational commander to become involved in execution increases following the breakdown of the operational planning process.

The Joint Operational Planning Process is designed to continue during execution, with three staff sections continually assessing and updating: Future Plans(J-5), Future Operations(J-35), and Current Operations(J-3).³¹ Each one of these sections is tied into the stream of data flowing from the battlespace and attempts to make plan corrections based on interpretation of this data. This process of continuous assessment significantly impacts current operations. Technology gives the operational commander the ability to watch current operations in a level of detail only imagined in the past. As the commander assesses real time execution he has the opportunity to "adjust operations.... to ensure objectives are met and the military end state is achieved."³² The operational commander and his staff have the capability to turn the seven-step Joint Operational Planning Process into a real-time process fused with execution. The drive to create a decision cycle that is faster than that of the enemy is realized by forfeiting the planning process.

A similar breakdown in the planning process is occurring as a result of counter-insurgency (COIN) warfare, with "bottom-up planning the norm for COIN operations. With

30. Williamson, "Analyzing the Effects of Network Centric Warfare on Warfighter Empowerment", 99.

31. JP 5-0, *Joint Operation Planning*, III-57.

32. Ibid, III-57.

few exceptions there did not appear to be a ‘next mission’ to prepare for.”³³ Decentralized planning has become a common occurrence in Marine forces in Iraq.³⁴ A reaction to the constantly changing nature of the fight and the difficulty facing operational commanders in creating hard operational objectives considering the “soft” objective of security. Rather than completely forfeit the planning process at the operational level it has been usurped by lower echelons that are closer to the problem and can build less complex, more focused plans without the bureaucratic lag associated with larger staffs. In the past these tactical operations could be planned and executed with little more than situation reports up the chain. Now, considering the connectivity that technology brings, the operational commander has the ability to exercise greater control over operations in which he and his staff had little original involvement. With the commander’s intent being the only guide to tactical planning, the tendency to become involved in execution is greater, particularly in light of the possible strategic implications of tactical actions during COIN operations.

The strategic impact of tactical actions

The final reason a commander is driven to centralize execution when technology allows is that individual events on the battle field increasingly have strategic importance. For the foreseeable future, an operational commander will not be involved in a battle that does not have some kind of strategic impact, strategic impact in the sense that the world is watching. Where United States forces go, the world’s media will certainly follow. The expanding political, legal, and environmental impacts of military action have limited the ability of commanders to allow decentralized execution.³⁵ While decentralized execution is still joint doctrine, there is a clear realization that “the level of control used will depend on

33. Sinclair, “In Search of the Single Battle,” 66.

34. Ibid, 64.

35. Vego, *Operational Warfare*, 627.

the nature of the operation or task, the risk or priority of its success, and the associated comfort level of the [commander].”³⁶ Decentralized execution may quickly fall prey to the decreased comfort level involved with high media exposure operations. “In a risk adverse political climate the increased flow of information will generate pressure to make ‘safe’ choices at the expense of more rapid decisions.”³⁷ Further, rarely will we embark on a military operation that does not have a priority on success.

Technology now allows a commander to see the battlefield with a “God’s eye” view, ultimately what commanders have been seeking since combat was first waged.³⁸ The speed that this battlefield changes and the depth of conflict may put the operational commander in a position to see strategic impacts from tactical actions well before the tactical commander sees them. This will drive the operational commander to influence the scope of war by controlling tactical assets in order to garner strategic effects.³⁹

Aside from potential media, political, and strategic ramifications of tactical actions, there is also the consideration that an operational commander, with unprecedented exposure to the battlespace and ability to intervene rapidly, should use that ability to stop a tactical action that is inconsistent with commander’s intent or that endangers the mission.⁴⁰ Further, as the potential for hostilities or escalation increases, the exposure to risk associated with a mission also increases. Despite any worthwhile commander’s insistence that pressure from above will not negatively impact operations, the ability for the National Command Authority, the Joint Chiefs, and other higher authority to view tactical operations through the same command and control networks creates an increased possibility for micromanagement and an

36. JP 1-0, *Doctrine for the Armed Forces of the United States*, IV-15.

37. Baddeley and Keggler, “Managing the Bits and Bytes,” 20.

38. Campen, “Communications support to Intelligence,” 58.

39. Vego, *Operational Warfare*, 622.

40. Vego, “Operational Command and Control in the Information Age,” 106.

element of increased pressure on mission success.⁴¹

Technological advances have created a data environment that is quickly leading the operational commander towards decision superiority. However, these same advances have created an array of external stressors and demands that he must react to, operational prerogatives that he must take advantage of, and mission concerns that he must act on. The complexity of command and control has only increased as tactical actions take on greater strategic significance. This significance is yet another reason for the operational commander to move towards more centralized execution.

Conclusions

The advance of technology is not going to stop. It may slow and its effects may be mitigated by cost or other factors; however, it is inevitable that the trend toward lower cost, lighter and more deployable technology will continue. With this expected growth one can only assume that the spread of communications, of information and data, will continue to reach further down the chain of command and into the various instruments of war. One can also expect that technology will tackle our ability to handle data with greater efficiency.

With these expectations the three primary influences toward greater centralized execution only increase in effect. Better technology spread over a wider part of the joint force will only make it easier for an operational commander to control execution. Better technology will make planning and execution cycles accelerate and will make higher echelons more involved in monitoring and controlling those cycles. Finally, improved technology will create greater opportunity to control the strategic impacts of tactical actions.

This sure advance of technology is no reason to abandon our joint doctrine of centralized planning and direction and decentralized execution. There is significant danger

41. Williamson, "Analyzing the Effects of Network Centric warfare on Warfighter Empowerment," 2.

in any attempts to centralize execution. First, reliance on the process of moving data through a system to eventually create decision superiority counts on many different critical capabilities. The information systems to support the flow of data are perhaps the clearest requirement to make the process work. Their vulnerability will always be a subject of heated debate. Beyond the physical systems involved is the process of gathering data, and developing information and knowledge. A process that inevitably will involve a person is certainly subject to error, either in the quality of data, the interpretation of data into information, or the translation of information into knowledge. Any adverse impact on either the systems or the process could result in the operational commander's loss of decision superiority. An impact mitigated by decentralized execution's push of decision superiority down to the tactical level.

Another aspect to consider is in the explosion of operational data beyond manageable quantities. As sensors expand with the battlefield, the likelihood that either the information process or the information system (or both) will become overwhelmed increases. Technology and staffs are certainly adapting and developing to move beyond this point; however, just what that point is has not been identified. Until it is identified, decentralized execution based on unity of effort and the commander's intent allows the continued pursuit of operational objectives when the operational commander's ability to control the battle has been surpassed.

Finally and perhaps most importantly: what happens to sheer initiative? If young leaders are developed under increasing levels of centralized control and execution, their ability to think creatively and decisively will be stifled. The downstream effects of this are clear. As these young leaders grow and take over operational command, both the tactical

leader and the operational leader are stuck looking for higher direction.

Operational command and control of hundreds of simultaneous tactical actions that have an aggregate operational value is best left to decentralized execution, for all of the reasons mentioned above. However, the worth and necessity of centralized execution should be considered. When a single tactical objective has operational or strategic significance the operational commander must consider centralized execution. In conventional conflict, these objectives are often clearly identifiable. Unfortunately, in today's COIN warfare, the tactical objective of security is difficult to define and is nested within the operational center of gravity frequently defined as the will of the populace. This complication coupled with frequently intense media scrutiny of military operations gives every action the potential for operational or even strategic significance.

What next?

Joint doctrine clearly recognizes that technological advances in command and control are challenging the dogma of decentralized execution but does nothing to either resolve this challenge or provide the operational commander with usable further guidance on when and how best to apply centralized execution. Admitting this is a problem is a significant first step. This admission does not take away from the importance of decentralized execution to joint doctrine. Nor does it address the many dangers of becoming too dependent on "Network-centric Warfare" that will resound with any of us who have ever used a government computer network. However, consideration must be given to valid questions about how confusing joint doctrine really is on this topic. Further, the importance of an operational commander to be able to intervene in a politically charged military operation or

to meet strategic objectives with the minimal application of power must be considered. Particularly in today's operating environment.

Out of these points you can glean the following recommendations. First, never undermine or train away the vital importance of initiative. Second, invest in highly redundant, defensible, and interoperable computer network technology that supports data flow to the lowest levels on the battlefield. Third, examine how the massive increase in real-time battlefield awareness couples with the planning process and a desire for that process to match the speed of execution. A planning process that slows the operational commander's decision cycle is bound to be altered or ignored. Finally, and most importantly, come to a consensus on joint doctrine. The value of decentralized execution built around the premise of maneuver warfare still exists. However, changes brought on by the application of technology coupled with the media intense, COIN-focused world we currently operate in necessitate a change to our doctrine. Where tactical actions are directed at tactical objectives, decentralized execution should be the norm. However where tactical actions are directed at operational or strategic objectives, joint doctrine should espouse command and control methods that limit the operational commander's involvement to the execution of that action alone. Despite the capability that technology provides to intervene simultaneously in many of these actions, his ability to consider all of the factors that combine to define the tactical action is still limited and should be bounded by doctrine to ensure success.

Bibliography

- Baddeley, Adam and Johnny Keggler. "Managing the Bits and Bytes." *Armada International* 28, no. 5 (Oct/Nov 2004), pg 16-20. <http://www.proquest.com/>, (accessed 13 October 2007).
- Bass, Charles A, Jr. *Decision Loops: The Cybernetic Dimension of Battle Command*. Monograph: School of Advanced Military Studies, Ft Leavenworth, December 1996.
- Canty, William J, Jr. (retired Electrical Engineer for Mitre Corporation and former Electronics Technician 1st Class during World War II), from an interview with the author, 28 September 2007. In addition to Mr. Canty's work in the development of the Air Force's Airborne Warning And Control System (AWACS) while he was employed by Mitre, he is an avid radio enthusiast. He also happens to be my uncle.
- Campen, Alan D. "Communications Support to Intelligence." In *The First Information War*, edited by Alan D. Campen. Fairfax, VA: AFCEA International Press, October 1992.
- Chaisson, K. "China report looks at 'informationization'." *Journal of Electronic Defense* 30, no. 7, (July 2007): 20. <http://www.proquest.com/>, (accessed 30 October 2007).
- Colodney, Lori L. *Operational Command and Control for Joint and Component Commands: Integration or Duplication?* Monograph: School of Advanced Military Studies, Ft Leavenworth, May 1995.
- Davis, Mark G. "Centralized Control/Decentralized Execution in the Era of Forward Reach." *Joint Force Quarterly*, no 35 (2004): 95-99. <http://www.proquest.com/>, (accessed 13 October 2007).
- Dudney, Robert S. "Reach-Forward and Other Concerns." *Air Force Magazine* 86, no. 4 (Apr 1, 2003): p.29. <http://www.proquest.com/>, (accessed 13 October 2007).
- Dunivan, Jim. "Surrendering the Initiative? C2 on the Digitized Battlefield." *Military Review* 83, no. 5 (Sep/Oct 2003): 2-10. <http://www.proquest.com/>, (accessed 25 October 2007).
- Keggler, Johnny. "The Wider the Band the Quicker the Pace." *Armada International* 31, no. 4 (Aug/Sep 2007: 46-52. <http://www.proquest.com/>, (accessed 25 October 2007).
- Lambeth, Benjamin S. "The Downside Of Network-Centric Warfare." *Aviation Week & Space Technology* 164, no. 1 (Jan 2, 2006): p.86. <http://www.proquest.com/>, (accessed 25 October 2007).
- Lok, Joris Janssen. "C{2} for the air warrior." *Jane's International Defense Review* 032, no. 010 (Oct 1, 1999): p.1. <http://www.proquest.com/>, (accessed 13 October 2007).
- Lowe, Christain. "Land Warrior Proves itself in Combat." *Military.com*, 3 August 2007.

<http://www.military.com/NewsContent/0,13319,144715,00.html?ESRC=topstories.RSS>
(accessed on 29 October 2007)

McClure, William B. *Technology and Command: Implications for Military Operations in the Twenty-First Century*. Occasional Paper No. 15. Center for Strategy and Technology, Air War College. Maxwell Air Force Base, AL: Air University Press, July 2000.

Parramore, Woody W. "Defining Decentralized Execution in Order to Recognize Centralized Execution." *Air & Space Power Journal* 18, no. 3 (Fall 2004): 24-26.
<http://www.proquest.com/>, (accessed 13 October 2007).

Potter, E. B. *Nimitz*. Annapolis, MD: Naval Institute Press, 1976.

Raytheon Corporation. "Microlight-I Hands Free Netted Radio System." Corporate data sheet, 2006. <http://www.raytheon.com/products/microlight/>, (accessed 15 October 2007).

Roman, Gregory A. *The Command or Control Dilemma: When Technology and Organizational Orientation Collide*. Maxwell Paper No. 8. Maxwell Air Force Base, AL: Air University Press, February 1997.

Santicola, Henry J. "Centralized control - decentralized execution." Research Report no. ADA4344. Carlisle Barracks, PA: Army War College, March 2005.
<http://www.proquest.com/>, (accessed 13 October 2007).

Schaefer III, John. "Centralized Execution in the Air Force." *Air & Space Power Journal* 19, no. 3 (Fall 2005): 15-21. <http://www.proquest.com/>, (accessed 13 October 2007).

Sinclair, Wayne. "In Search of the Single Battle." *Marine Corps Gazette* 91, no.2 (Feb 2007) pg. 64. <http://www.proquest.com/>, (accessed 25 October 2007).

Tech Target, "IT-specific encyclopedia,"
http://whatis.techtarget.com/definition/0,,sid9_gci212177,00.html, (accessed 15 October 2007).

U.S. Department of Defense. *Report to Congress: Kosovo/Operation ALLIED FORCE After Action Report*. 31 January 2000.
http://www.globalsecurity.org/military/ops/allied_force.htm, (accessed 30 October 2007).

U.S. Office of the Chairman of the Joint Chiefs of Staff. *Doctrine for the Armed Forces of the United States*. Joint Publication (JP) 1. Washington, DC: CJCS, 14 May 2007,
<http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).

U.S. Office of the Chairman of the Joint Chiefs of Staff. *DOD Dictionary of Military and Associated Terms*. Joint Publication (JP) 1-02. Washington, DC: CJCS, 12 April 2001,
<http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).

- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Operations*. Joint Publication (JP) 3-0. Washington, DC: CJCS, 17 September 2006, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Command and Control for Joint Maritime Operations*. Joint Publication (JP) 3-32. Washington, DC: CJCS, 8 August 2006, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Interdiction* (JP) 3-03. Washington, DC: CJCS, 3 May 2007, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Operation Planning*. Joint Publication (JP) 5-0. Washington, DC: CJCS, 26 December 2006, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Communications System*. Joint Publication (JP) 6-0. Washington, DC: CJCS, 20 March 2006, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Vision 2010*. Washington, DC: CJCS, July 1996, <http://www.dtic.mil/jv2010/jvpub.htm>, (accessed 13 October 2007).
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Joint Vision 2020*. Washington, DC: CJCS, June 2000, <http://www.dtic.mil/jointvision/jvpub2.htm>, (accessed on 13 October 2007).
- U.S. Marine Corps. *Marine Corps Operations*. Marine Corps Doctrine Publication (MCDP) 1-0. Washington, DC: Headquarters U.S. Marine Corps, 27 September 2001, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- U.S. Navy. *Naval Command and Control*. Naval Doctrine Publication (NDP) 6. Office of the Chief of Naval Operations. Washington, DC: Department of the Navy, 19 May 1995, <http://www.dtic.mil/doctrine/>, (accessed 13 October 2007).
- Van Creveld, Martin. *Command In War*. Cambridge, MA: Harvard University, 1985.
- Vego, Milan N. "Operational Command and Control in the Information Age." *Joint Force Quarterly*, no. 35 (2004): 100-107. <http://www.proquest.com/>, (accessed 13 October 2007).
- Vego, Milan N. *Operational Warfare*. Newport, RI: Naval War College, 2000.
- Vystorobskiy, G. D. and S.V. Sova. "Operational Command and Control in Electronic Warfare." *Military Thought* 14, no 3 (2005): 46-51. <http://www.proquest.com/>, (accessed 13 October 2007).

Williamson, Ahmed T. “Analyzing the Effects of Network Centric Warfare on Warfighter Empowerment” Master’s Thesis, Naval Postgraduate School, June 2002.