

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 VIRTUAL COLLABORATION: ADVANTAGES AND DISADVANTAGES IN THE PLANNING AND EXECUTION OF OPERATIONS IN THE INFORMATION AGE				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) GREGORY J. FOX MAJ, SC, US ARMY Paper Advisor (if Any):				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: Network Centric Warfare seems to have become the latest buzzword when talking about the future of the military. As technology improves, a more "connected/networked" force is more a reality and less a conceptualization. Recent operations in Afghanistan and Iraq have successfully demonstrated, to a degree, the operational applicability of network centric warfare and operations. However, network centric warfare is not one system; it is a system of systems from sensors to information flow. In analyzing the specific advantages and disadvantages of one of the systems, virtual collaboration, it becomes clear that commanders and staff at all levels of war are understanding the potential of this system but need to be wary of its potential shortfalls that can disrupt or negate any advantages gained. To exercise fully the capabilities of virtual collaboration, commanders and staffs must understand the limitations, develop coherent standards, implement training and make every effort to add virtual collaboration as part of their normal business practice in day-to-day activities.					
15. SUBJECT TERMS: VIRTUAL COLLABORATION, E-MAIL, TEXT CHAT, WEB-PORTALS, NETWORK CENTRIC WARFARE					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON Chairman, JMO Dept
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			19b. TELEPHONE NUMBER (include area code) 401-847-2767

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VIRTUAL COLLABORATION:
ADVANTAGES AND DISADVANTAGES IN THE PLANNING AND
EXECUTION OF OPERATIONS IN THE INFORMATION AGE

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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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9 February 2004

Abstract

VIRTUAL COLLABORATION: ADVANTAGES AND DISADVANTAGES IN THE PLANNING AND EXECUTION OF OPERATIONS IN THE INFORMATION AGE

Network Centric Warfare seems to have become the latest buzzword when talking about the future of the military. As technology improves, a more “connected/networked” force is more a reality and less a conceptualization. Recent operations in Afghanistan and Iraq have successfully demonstrated, to a degree, the operational applicability of network centric warfare and operations. However, network centric warfare is not one system; it is a system of systems from sensors to information flow. In analyzing the specific advantages and disadvantages of one of the systems, *virtual collaboration*, it becomes clear that commanders and staff at all levels of war are understanding the potential of this system but need to be wary of its potential shortfalls that can disrupt or negate any advantages gained. To exercise fully the capabilities of virtual collaboration, commanders and staffs must understand the limitations, develop coherent standards, implement training and make every effort to add virtual collaboration as part of their normal business practice in day-to-day activities.

Introduction

“Command and control is most effective when decision superiority exists. Decision superiority results from superior information filtered through the commander’s experience, knowledge, training, and judgment; the expertise of supporting staffs and other organizations; and the efficiency of associated processes. While changes in the information environment have led some to focus solely on the contribution of information superiority to command and control, it is equally necessary to understand the complete realm of command and control decision making, the nature of organizational collaboration, and especially, the “human in the loop.”¹

Joint Vision 2020 lays out a framework that defines the requirements for conducting future joint operations. As we progress towards a uniquely Joint and Network-Centric environment, our fascination with technology and the capabilities it offers obscures the real issues at hand: the human element in the development and execution of operations. War is a human machination implemented in ever-increasing complexity. In our quest to simplify war we have developed/used technology to our advantage, making us more lethal while minimizing the elements of the “fog of war” through information superiority. The Operational Commander today differs from those of the past in the amount of information that is available and interactive, instantaneously at the click of a button – the embodiment of Network-Centric Warfare.

Network-Centric Warfare, as defined by Alberts, Garstka and Stein, “is about human and organizational behavior.”² It encompasses essentially the sharing of battlespace information through a series of systems that filter down through networked sensors and information management ultimately being assessed in environments facilitated by virtual

¹ *Joint Vision 2020*, (Washington, D.C.: U.S. Government Printing Office, [2000]), 31.

² David Alberts, John Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Learning Information Superiority*, 2d ed. (Revised) (Washington, D.C.: Department of Defense C4ISR Cooperative Research Program, 1999), 88.

collaboration.³ It is here, in the virtual collaboration world that most literature falls short in addressing how the “human in the loop” interacts with the information presented using specific networked systems that make up virtual collaboration. Therefore, this paper presents advantages and disadvantages of using virtual collaboration in the planning and execution of operations in the digital age. Specifically, it addresses the advantages of:

1. Compressed Time and Space factors in planning and executing operations.
2. Real-time spanning of the command levels.
3. Simultaneous coordination capabilities.

and the disadvantages of:

1. Bypass of normal command channels.
2. Information overload.
3. Standards of collaboration.

What is Virtual Collaboration and what does it encompass?

Virtual Collaboration is not a new capability or concept to the military. It is a new term that characterizes what military commanders and staffs have been doing since the invention and application of Morse Code, the telephone and, as used since WWI through to the present, the radio. What has changed is the audience that has access to the information or, more importantly, who can influence the information, and the technology used to perform it. Virtual collaboration in the military context is the ability of a commander and staff working together, in real or near real time, on a common operational objective. Their work often revolves around electronic documents, digitized maps displaying information gathered from sensors throughout the battlespace, or other information available to the common effort. To enable their joint work, it is necessary for collaborators to communicate with each other

³ Ibid., 89.

using available communication channels. Today these communication channels consist of computer enabled communication that includes electronic mail, text chat, electronic whiteboard, audio-video conferencing and web portals. Virtual collaboration encompasses all these tools. For the purposes of this paper, electronic mail, text chat and web-portals will provide the main basis for the discussion of the advantages and disadvantages.

Where is it used most? Who is using it?

It could be said that virtual collaboration awareness was born in the early 1990's, starting with electronic mail (e-mail) as a commander's tool and progressing through staff levels by 1996-7. With the increased network capabilities of both garrison and field environments, the ability to project e-mail from strictly operational levels to tactical levels during the onset of operations in Macedonia (the prelude to Bosnia and Kosovo), lit the operational light bulb in the minds of many commanders. They recognized an improved capability to move information, unimpeded by the normal constraints present in most organizations.⁴ With the continued advancement of technology and the internet, specifically the development of new real-time tools (text chat, audio-video conference), commanders and staff realized the great potential these tools possessed and began to integrate them into their daily operations. While resulting in a hodgepodge of technology that varied from command-to-command and service-to-service, collaboration on the whole is in use by virtually every organization, from the lowest company-sized element to Joint Task Force level. Most recently, virtual collaboration significantly contributed to the actions in the Middle East. In

⁴ During the 2nd Brigade, 3rd ID initial deployment into Macedonia, Jan 1994, e-mail was used to send operational reports from the unit on the ground up through the Division Chief of Staff, the VII Corps Commander, USAREUR Commander and finally EUCOM. Interestingly enough, the use of this new tool did not change the organizational information flow and messages progressed serially up through the chains of command. Although there was some grumbling from higher because technically, the brigade on the ground was not supposed to be sending updates through the 3ID command structure.

Operation Enduring Freedom, the XVIII Airborne Corps relied extensively on collaborative tools bundled in a program called Info Workspace (IWS) to coordinate the planning and execution of ongoing and future operations.⁵ Moreover, during Operation Iraqi Freedom, V Corps utilized collaborative tools, bundled in a program called the Defense Collaborative Tool Suite (DCTS), in conjunction with e-mail and web-portal capabilities.

Lastly, there is an ongoing effort, started in 2000, by the Defense Information Systems Agency, to standardize and field collaborative solutions to all the Combatant Commands in each of the Services. To date, collaborative services have been installed in nine out of nine combatant commands and in the Office of the Secretary of Defense, Defense Information Systems Agency, Joint Staff and the Defense Threat Reduction Agency. In addition, there are currently 11 DCTS systems fielded to tactical units with 155 systems in various stages of integration.⁶

Advantages of Virtual Collaboration

During the Gulf War, planning and execution of operations took on a routine procedure that has been incorporated through doctrine. The deliberate planning process, which results in the publication of an Operations Order, requires legwork of several staffs and commanders, who may reside in different parts of the world. For the Gulf War, the US Army's VII Corps was located in Germany, with attached units coming from CONUS. The case was similar for the Air Force and Navy components but to a lesser extent than experienced by the Army forces. In order for any collaboration between the controlling headquarters and subordinate units to occur, telephone conferences had to be set-up or

⁵ 18th ABC Information Management Plan, Tab E.

individuals had to be flown to a general location for information exchange. From that point, further coordination would occur on an ad hoc basis, depending on what further information was required.⁷ Overall, it was a rather cumbersome procedure, which did not favorably lend itself to the time and space factors so critical to the development of operations today.

Compressed Time and Space factors in planning and executing operations

The use of tools such as e-mail, text chat and web portals, all part of the virtual collaboration family, significantly compress the time and space factors. E-mail is perhaps the most widely accepted and used tool in the staff and commanders tool kit. Its asynchronous operation provides the ability for a commander or staff to collaborate with one or several, local and/or geographically removed individuals without regard to the availability of time or space.⁸ During the 1991 Gulf War, General Schwarzkopf's operational idea or concept of the operation, providing a clear vision of how he intended to conduct the campaign, was most likely transmitted via tactical facsimile or via courier. Fast forwarding to OEF and OIF, the concept of the operation could now be transmitted, to several units simultaneously and in geographically dispersed areas within seconds. This significantly reduced the time taken by subordinate commanders to review the concept and provide feedback to the controlling headquarters. As a result, the "time is being compressed...the tempo of operations is being increased."⁹ Thereby allowing, "commanders, staff and

⁶ Defense Information Systems Agency, the Advanced Information Technology Services Joint Program Office. "DCTS Fielding Status," 23 January 2004.

⁷ Mark Mandeles, Thomas Hone, and Sanford S. Terry. *Managing "Command and Control" in the Persian Gulf War*, (Westport: Praeger Publishers, 1996), 149-150.

⁸ *Chairman, Joint Chiefs of Staff Manual (CJCSM 6715.01)*, (Washington, D.C.: U.S. Government Printing Office, [2003]), B-1.

⁹ David Alberts, John Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Learning Information Superiority*, 2d ed. (Revised) (Washington, D.C.: Department of Defense C4ISR Cooperative Research Program, 1999), 51.

subordinates...the ability to dictate the tempo of operations and to impose the commander's will on the enemy.”¹⁰

Text chat is the next significant and newest tool that allows for the compression of time and space in real-time. In contrast to e-mail, text chat allows for synchronous, real-time conversations in a one to one or multi-user conference.¹¹ While e-mail allows for asynchronous distribution of information to single and multiple entities, text chat provides a forum by which information submitted is immediately available to all users participating in the chat forum. A key example of how text chat significantly compressed the time and space elements of planning is shown by the planning and execution of the V Corps Deep Strike mission during OIF. A combination of e-mail, used primarily to transmit images via its file attachment capability, and text chat allowed staff members in the Fires Cell to coordinate, in real-time with staff members in the 11th ATK Aviation Brigade and other elements directly involved in the planning and subsequent execution of the Deep Strike operation. Text chat in this instance provided instantaneous updates during the planning phase of the operation that allowed staff members in geographically separated locations the ability to adjust segments of the operation based on the updated information received.¹²

¹⁰ Jeffrey L. LaFace, “Digitization and the Commander: Planning and Executing Military Operations,” (Unpublished Research Paper, School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, KS. 2001), 30.

¹¹ *Chairman, Joint Chiefs of Staff Manual (CJCSM 6715.01)*, (Washington, D.C.: U.S. Government Printing Office, [2003]), C-3.

¹² Personnel in the Fires and Plans Cells were actively on text chat providing up to date information regarding the planning of the Deep Strike to members within the command post and to other organizations such as CFLCC, 3ID and the 11th ATK Aviation Brigade. However, command and control of the operation was conducted via radio and single channel satellite.

In previous conflicts where Mobile Subscriber Equipment¹³ carried mostly telephonic calls, staff and commanders during OIF used e-mail and text chat capabilities far more than the telephone to conduct coordination, planning and execution activities.¹⁴ This is partly due to the fact that the capability of virtual collaboration did not exist during the first Gulf War and simply because the ability to always be available through e-mail or text chat saved the time required to figure out who to call, what their number was and whether they were available or not. In effect, the virtual collaboration capabilities of e-mail and text chat significantly changed the tempo of operations, as stated, and because it contributes to the compression of time and space for planning and operations, allows the commander the opportunity to work inside the decision cycle of the adversary.

Real-time spanning of the command levels

“A traditional hierarchy has a topology that largely restricts interaction among members of the organization to direct superior/subordinate interactions and whose number of levels is determined by the limits of Industrial Age notions of span of control (maximum of five to seven). Its approach to command and control is characterized by centralized planning, decomposition of tasks, and control processes that largely rely on deconfliction. Hierarchies spawn stovepipes, which are vertical, tightly coupled component organizations that are optimized for a narrowly focused objective.”¹⁵

Until the development of real-time, synchronous, internet-based tools, collaboration among commanders and staff, in the vertical and horizontal planes, consisted mainly of telephonic or face-to-face communication. As indicated previously, the use of virtual

¹³ Mobile Subscriber Equipment. The Army’s primary tactical communications equipment providing both telephonic and broadband capabilities to the warfighter. Typically seen at Corps and below but interfaces with systems at Echelons Above Corps (i.e. CFLCC/JTF Forward in Camp Doha).

¹⁴ It has been said that OIF was a war that was conducted through e-mail, text chat and networked sensors. In a daily count of calls versus e-mail sent in the V Corps Main CP, e-mail message traffic was in far greater numbers than telephonic calls. Clearly, a sign that the preferred method of communication, regardless of operational factors involved, was via virtual means.

¹⁵ David Alberts and Richard Hayes, *Power to the Edge*, (Washington, D.C.: Department of Defense Command and Control Research Program, 2003), 215-216.

collaboration tools significantly affects time and space factors in a positive direction for the commander and staff. Along those same lines, real-time communication through the use of tools such as text chat serves to provide “information that the commander receives...through a flattened organization that is available instantaneously in the network as opposed to the reporting system of the past.”¹⁶

Perhaps the most affected member of any organization is the staff planner. During OIF, the intelligence community utilized text chat to pass on immediate information from field units up and down the command levels. One intelligence staff officer with the 11th Signal Brigade introduced what he called the “Swarm Theory” which illustrates how problems at the tactical level can be elevated and addressed at operational levels through the use of text chat. In essence, a problem is relayed to the Tactical Operations Center (TOC) and is then input into a chat program where it is then “swarmed” by experts from the Pentagon to Centcom.”¹⁷ Through this innovation, it is evident that text chat revealed unique capabilities for the “current operations” staff officer and is capable of providing the operational planner with the information necessary to frame or create a successful plan.

The synchronous nature of text chat is alluring to planners because it allows them the ability to concurrently participate in planning environments (within and outside their organization) obtaining real-time updates that affect how the plan is formulated. The key piece, as observed previously, is that the organizational constraints that were typically in place are no longer a barrier to planning and executing operations. During OIF, the V Corps Main CP was filled with staff officers at various levels (from Corps Staff to Division LNOs

¹⁶ Jeffrey L. LaFace, “Digitization and the Commander: Planning and Executing Military Operations.” (Unpublished Research Paper, School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, KS. 2001), 40.

and adjacent unit (I MEF) LNOs) each enabled with text chat allowing them to dynamically provide input to virtually any phase of planning. What is significant here is the fact that multiple levels of commands are now being coalesced into a common picture based on the initial or continued guidance of the commander. Enabling the real-time spanning of the command levels through the use of tools like text chat also serves to affect the operational functions of war such as Operational Command and Control where previous documentation indicates that it requires centralized direction and decentralized execution (a top down approach).¹⁸ In contrast, current documentation indicates that, given the flattening of organizational structures through virtual collaboration, the instantaneous access to information allows units to self-synchronize their operational posture.

The ability to self-synchronize is a benefit of real-time collaboration across command levels and is characterized by “rapid movement of information as to obviate the time requirements of the “OO” portion, allowing commanders to exploit speed of command.”¹⁹ The “OO” portion being the Observe and Orient portions of the OODA loop as developed by Col John Boyd, USAF (Retired). Lastly, the paradigms in OEF and OIF suggest that, through real-time spanning and the overall application of collaboration in all forms across command levels, self-synchronization is transforming the current hierarchical bounded organization to an “edge” organization that “encourages appropriate interactions between and among any and all members.”²⁰

¹⁷ Joshua Davis, “If We Run Out of Batteries, This War is Screwed,” *Wired Magazine*, June 2003, <<http://www.wired.com/wired/archive/11.06/battlefield.html>> [13 January 2004], 3.

¹⁸ Milan N. Vego, “Operational Warfare,” (Unpublished Research Paper, U.S. Naval War College, Newport, RI: 2000), 189.

¹⁹ David Alberts and Daniel Papp, ed., *Information Age Anthology: The Information Age Military*, Vol. 3, *The Seven Deadly Sins of Network Centric Warfare*, by Thomas Barnett. (Washington, D.C.: Department of Defense C4ISR Cooperative Research Program, 2001), 498.

²⁰ David Alberts and Richard Hayes, *Power to the Edge*, (Washington, D.C.: Department of Defense Command and Control Research Program, 2003), 216.

Simultaneous coordination capabilities

Unlike the previous two advantages, the ability to coordinate in an unconstrained environment maximizes the use of every tool in the virtual collaboration kit bag. From the use of e-mail to collaborative white-boarding and ultimately video teleconferencing, commanders and staff have the ability to coordinate across multiple platforms and via technologies that only recently have proven their merit. Again, organizational hierarchies are broken down with the use of these tools. However, what must be considered is the methods by which these tools operate. As previously indicated, e-mail is an asynchronous tool which allows commanders and staff to operate independently of time. In contrast, text chat is synchronous which requires all participants to be active in the session for it to be successful. The simultaneous use of both of these tools enables individuals the ability to coordinate with counterparts residing in both planes (time and space) but not necessarily in the same forums. As an example, a staff member dealing with logistical operations may be coordinating for delivery of supplies coming into a theater of operation over e-mail while providing real-time updates to logistics in support of a ground operation while also participating in a virtual conference concerning logistical support for phase IV operations. Keep in mind that all this is occurring from one location on one computer workstation operating in both asynchronous and synchronous environments. In fact, during OIF, members of the V Corps Staff routinely operated in this mode of operation. E-mail was used to conduct near and long-term planning, text chat was used for real-time updates to current planning operations, and group conferencing (audio only) was used for current and future coordination planning.²¹ A

²¹ A simple walk through the V Corps Main CP during OIF indicated that the entire staff was centralized around their computer and the information being displayed on it. Virtually every computer, with the exception of the designated C4ISR computers, had e-mail and text chat windows actively engaged. All this while they were

majority of the time, the staff officer was multi-tasking using these technologies and participating at levels above and below his organizational level.

An example at the JTF level is with JTF 519, which is “capable of planning and executing any contingency from relatively small-scale operations, such as noncombatant evacuations or maritime interdiction, to major theater conflict.”²² The unique feature about JTF 519 is that the staff is not built around an active headquarters; instead, the staff is distributed throughout the country ranging from locations at Fort Meade, Maryland, to locations as far north as Alaska.²³ During exercise Terminal Fury, JTF 519 used collaborative tools that proved beneficial to the staff and action officer levels by speeding up the staffing process and allowing individuals to work simultaneously on tasks from their desk while participating in boards, centers and cells. Furthermore, collaborative tools contributed to the inclusion of many individuals/organizations that could not have otherwise participated. This ultimately resulted in more informed decision-making and better deconfliction in planning.²⁴ Additionally, JTF 519 utilized a relatively new collaborative technology using web portals to provide persistent but asynchronous information in the collaborative planning environment. Used alone, it provided an effective means of sharing written documents, charts and other information in near real-time and allows the JTF member the ability to post their information to the site (essentially a fire and forget technology), making it immediately available to anyone having access to the website.²⁵ This type of technology was also used

simultaneously participating in planning operations or support activities related to a current operation. The scene was similar at the CFLCC HQs as well.

²²Walter Doran, Admiral, USN, “Pacific Fleet Focuses on War Fighting,” *Naval Institute Proceedings*, August 2003 <<http://www.pacom.mil/news/news2003/0308JTF519.pdf>> [28 November 2003], 58.

²³ Ibid., 59.

²⁴ Dwaine Boteler, <Dwaine.boteler@us.army.mil> "Re: Collaboration Lessons Learned from a JTF Perspective," [E-mail to Gregory J. Fox <Gregory.fox@us.army.mil>] 8 January 2004.

²⁵ Ibid.

extensively during OIF and OEF, which is rapidly becoming an integral part of staff action planning.

Disadvantages of Virtual Collaboration

“What is scary about NCW’s ambition is the strain it may put on commanders at various levels to integrate the commander’s intent from all other commanders and not just up the chain of command. NCW promises to flatten hierarchies, but the grave nature of military operations may push too many commanders into becoming control freaks, fed by an almost unlimited data flow. In the end, the quest for sharing may prove more disintegrating than integrating.”²⁶

As with any technological advances, there are considerations that must be taken into account to avoid pitfalls that may stifle any gains the new technology provides. While virtual collaboration is enticing and portrayed, through NCW and more recently in the US Army’s Transformation Roadmap to Transformation 2003²⁷, as the way ahead, there are pitfalls that if not understood, can derail the planning and/or execution of any operation undertaken today. Additionally, these pitfalls present specific challenges to the commanders, at all levels, because of the networked nature of systems and the inherent interaction between the systems and the “human in the loop factor”.

Bypass of normal command channels

One of the underlying themes of NCW is the premise of a flattened organizational hierarchy through which commanders and staffs conduct concurrent and parallel planning functions free of normal hierarchical barriers. The danger associated with this capability is

²⁶ David Alberts and Daniel Papp, ed., *Information Age Anthology: The Information Age Military*, Vol. 3, *The Seven Deadly Sins of Network Centric Warfare*, by Thomas Barnett. (Washington, D.C.: Department of Defense C4ISR Cooperative Research Program, 2001), 500.

²⁷ *United States Army Transformation Roadmap 2003*, <http://www.oft.osd.mil/library/library_files/document_334_2003ArmyRoadmapFull.pdf> [3 February 2004], 8-8, 8-9.

for members to bypass their own organizational and command channels in an effort to coordinate and conduct staff planning functions. While this is not something new, because it could and was accomplished using telephones, it presents an area of concern due to the increased accessibility to information and the ease by which a staff member can obtain that information. At an operational level, it is enticing for commanders to micromanage subordinate units by observing the information presented in collaborative forums (e-mail, chat, web portals).²⁸ This is particularly prevalent when the stakes are high (i.e. combat) and contributes to the failure of a unit's ability to self-synchronize thereby removing any ability of the unit to operate independently to the situation.²⁹ Conversely, subordinates, ... "when provided with the larger picture historically available only to senior commanders, are also likely to second guess decisions made at higher levels and (in richly connected systems) have the information required to undertake initiatives their superiors may find inappropriate."³⁰ While this illustrates one problem that may occur when bypassing normal command channels, there is another problem, which can bring planning to its knees.

The ability to freely access information available allows commanders and staff to see the availability of resources and the effects of operations in real time. While this is a significant benefit, as previously indicated it has a particular downside by making information available where it would normally be requested through normal military channels. Therefore, in bypassing the command or organizational channels, lack of appropriate coordination can occur which can set the conditions for unnecessary friction during the planning phase of any operation. The use of web portals, where information is

²⁸ David S. Alberts, *Information Age Transformation: Getting to a 21st Century Military* (Washington, D.C.: Department of Defense Command and Control Research Program, 2002), 62.

²⁹ Ibid., 63.

³⁰ Ibid.

readily available for any to see, is one such collaborative process where this particular pitfall can occur. An example of this can be articulated by a commander or staff member accessing information relating to the availability of ammunition stockpiles for an upcoming operation. Seeing the information and making a legitimate (in their mind), although incorrect, decision that the resources are there, they then plan for those resources and make them an integral part of the plan. What they may not know is that those resources have already been allocated or the information provided was dated. In either respect, failure to contact other, subject matter experts, and thereby reacting to information obtained outside their normal organizational structure, could put their operation at risk.³¹

Information overload

“When improved sensors are coupled with extensive communications links and advanced data-processing, the result is an ever-increasing flow of detailed information. Unfortunately, the explosion of available information inevitably results in information overload and flawed decisionmaking. Human beings commonly deal with this by ignoring much of the inflow, thus negating the purpose of the information systems in the first place.”³²

Information overload is of particular concern, especially in face of operations conducted in an information rich environment. Today’s environment places information at the fingertips of staff and commanders alike in a constant stream of data. E-mail alone is the biggest perpetrator contributing to this overload. During planning operations, information received via e-mail pertaining to the operation is received in the same manner and priority as normal e-mail. As the steady stream of e-mail messages continue to pour in, our normal tendency is to simply ignore what we consider unimportant or insignificant. Couple this with the fact that most information does not arrive in a linear fashion, staff officers and

³¹ Ibid., 64.

³² Thomas K. Adams, “Future Warfare and the Decline of Human Decisionmaking,” *Parameters*, Winter 2001-02, <<http://carlisle-www.army.mil/usawc/Parameters/01winter/adams.htm>> [13 December 2003].

commanders end up spending valuable time searching through countless e-mail.

Additionally, because of the steady stream of information, there is a hesitation to determine when to stop collecting or waiting for information in order to make a decision.³³ This essentially equates to the staff officer who has their e-mail set to check e-mail every 10 seconds or continually hits the refresh button on their browser to see if new information was posted. While e-mail is the biggest contributor of information overload because its “push” nature makes it difficult to separate critical information from the routine daily message traffic³⁴, web-portal technology also contributes to information overload.

While some believe that utilizing “pull” technology or web-portal systems, we can eliminate, to a good degree, information overload. The thought that by making information available where a user must take action to get it, allows them to decide what and what is not important. While this is mostly true, the reality is that “pull” technology serves to provide confusion and frustration due to information routinely buried in complex hierarchies making it difficult to find the necessary information. By shifting to a “pull” technology, the user now shifts their question from “how does one sort through a pile of information to find out what is useful? to how does one know what information is available so that it can be pulled?”³⁵ While not being deluged with unrelated messages, the problem now shifts to where is the information and, once found, how much minutia must be sifted through to get to the required information.

Standards of collaboration

³³ David S. Alberts, *Information Age Transformation: Getting to a 21st Century Military* (Washington, D.C.: Department of Defense Command and Control Research Program, 2002), 56 - 57.

³⁴ Ibid., 56.

³⁵ Ibid., 57.

In order for collaboration to be effective, two items must be considered; first, the standards with respect to the conduct of virtual collaboration must exist to make the collaborative sessions productive and second, technological standards must be synchronized to allow virtual collaboration to take place. Only recently have commanders and staff, particularly at the Strategic and Operational levels, realized the power of virtual collaboration and its applicability to planning and executing operations. The downside of this realization is, that in an effort to mold current operational art processes to the collaborative tools available, the tools often do not lend themselves easily to the process or the process becomes protracted as commanders and staff attempt to find ways to integrate this capability into the process. When V Corps stood up DCTS, the command struggled with how to integrate this new capability into an existing process, essentially trying to fit a square peg into a round hole.³⁶ Unfortunately, time did not allow V Corps to develop complete standards of operation or tactics, techniques and procedures (TTP) to utilize this tool to its fullest potential.³⁷ E-mail, text chat and web-portal technologies provide an unlimited information resource to the command. However when standards do not exist regarding how these tools are to be used, what forums they should be used in and how the information should flow within the organization, the planning and execution processes tend to revert back to their historical methods with the new technologies being abandoned or branded as inadequate.

The technological standards are almost as important but tend to be mostly transparent to the command and staff. This is only considered to illustrate that even if a headquarters has

³⁶ V Corps developed an effective Battle Update Briefing process prior to the implementation of DCTS. When DCTS was implemented, the staff attempted to simply port the current process into the collaborative tool, which was painfully unsuccessful. However with time, and coaxing from specific staff members (primarily the Chief of Operations), an effective method was developed. The downside was that the new process evolved after OIF had already begun.

a firm grasp of virtual collaboration, practices it and knows what tools perform best, they can easily be derailed if the tools themselves are incompatible with other agencies or commands involved. This was a significant problem during OIF where V Corps standardized on DCTS and was in control of four divisions not habitually associated with its command structure. These divisions used IWS, which was incompatible with every collaborative tool, except for e-mail and web-portals, used by V Corps. This proved to be a significant limiting factor and, until those units were hastily fielded with the DCTS system, no collaboration outside of e-mail or web-portals could take place.

Making Collaboration Commonplace

There is no stopping the technological march towards a richer information-sharing environment where virtual collaboration is less a gadget and more a combat enabler however; there are certain developments that must occur in order to ensure virtual collaboration achieves acceptance. Lessons learned from Operation Allied Force in Kosovo drive this point home.

“The widespread use of video teleconferencing and other advanced technologies for command and control 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 joint and combined exercises.”³⁸

³⁷ V Corps had an Information Management Plan however, due to the lack of the full spectrum of collaboration tools, the plan itself was mainly about the organizational flow of information which also branched into the C4ISR areas.

³⁸ Thomas J. Howley, “Collaborative Operations,” *Department of Defense Command and Control Research Program*, January 2004, <http://www.dodccrp.org/6thICCRTS/Cd/Tracks/Papers/Track4/056_tr4.pdf> [18 January 2004], 3.

Commands especially at the operational level, must develop coherent standards or guidelines on collaborative sessions. This is particularly critical in JTF environments where a melding of all service branches towards one common objective can be difficult given the different operational perspectives each service brings to the table. Chairman of the Joint Chiefs of Staff manual 6715.01 is an excellent example of how this is implemented. While it not only defines what collaboration is, it goes further by stipulating what forms of collaboration are appropriate dependant on the type of operation and the robustness of the C2 at the various levels of command. Essentially, this document is a great collaboration primer for any member assuming duties within the JCS organizational structure. The XVIII Airborne Corps also produced a great document called the 18th ABC Information Management Plan, which provides specific instruction pertaining to the use of collaboration tools and how they fit into the development of the common operational picture.³⁹ Today, the XVIII Airborne Corps has streamlined most of their operational requirements through the use of these tools based on the guidelines presented in their information management plan. V Corps produced a similar document however; it was published as part of the operational plan for OIF and therefore lacked some of the in-depth information that is contained in the previous two documents.⁴⁰ Both documents used by the XVIII Airborne and V Corps were supported by another critical document appropriately labeled the “Digital Rules of Engagement” or DROE. Just as a fighting force needs an effective ROE, so does a staff that is using virtual collaboration.

Another development that must occur is training. As indicated during Operation Allied Force, these technologies must be exercised as regularly as commanders and staffs are

³⁹ 18th Airborne Corps Information Management Plan, Tab E.

⁴⁰ See note 37.

exercised during a training cycle. Additionally, training should be focused on the operational utility of collaboration, not just where to click and what buttons to push. General structured procedures should be encouraged and then innovation should be promoted to further hone processes to conduct the mission. Essentially, find out how the elements of operational art can be applied to virtual collaboration not the other way around.

Lastly, virtual collaboration should be made a part of daily operations thereby giving maximum exposure to the commanders and staff at any level. While this occurs using e-mail, commanders and staffs are sorely behind when it comes to utilizing the full capabilities of virtual collaboration. Making collaboration part of commands normal business practice lessens the friction involved when conducting planning for operations and, as experience has shown, that those who make a habit of using collaborative tools quickly develop new and radically better methods to accomplish their tasks.

Conclusion

Operation Iraqi Freedom as well as the Global War on Terrorism is providing a substantial glimpse into the advantages of waging network-enhanced warfare much of which is still undocumented or documented at the classified level. However, the information available is revealing limitations first from a technological standpoint and second from a procedural standpoint. The procedural piece, as illustrated by the advantages and disadvantages, must be understood and practiced. Additionally, while the sole use of virtual collaboration tools does not change the thought processes presented through operational art teachings, it allows commanders and staffs the ability to project operational information in ways that until recently, has never been possible. While this is a significant advantage, this

paper also serves to provide insight for commanders and staffs of the inherent and sometimes unavoidable pitfalls that are present through the use of virtual collaboration tools.

The transformation of the military to a network centric posture creates a condition that is all about the information. How that information is handled is a critical factor that will affect all aspects of the operational art. The key, with virtual collaboration, is to ensure that the information is shared effectively, efficiently and does not negatively impact a commander's ability to decisively operate in any theater of operation now or in the future. And to learn from the experiences of past and present operations in doing so.

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