10th International Command and Control Research and Technology Symposium: The Future of C2

Topic: Decision-making and Cognitive Analysis

Trust And Influence In The Information Age: Operational Requirements For Network Centric Warfare

Author: Major Nicole Blatt, USAF

Based on Master's Thesis, Dec 2004
Naval Postgraduate School, Monterey, CA
Approved for public release; distribution is unlimited
Full text available at: http://handle.dtic.mil/100.2/ADA429673

15 March 2005

6306 Pelican Crescent S
Suffolk, VA 23435
Telephone: (757) 203-3308
Email: Nicole.Blatt@je.jfcom.mil

The views expressed in this paper are those of the author and do not reflect the official policy or position of the Department of Defense of the U.S. Government.

Abstract

The information revolution in military affairs (RMA) exists and is happening now. Advances in information technology create new capabilities, and those capabilities affect how we work, live, and even fight wars. This paper discusses how military leaders can change the way it plans, operates, educates, organizes, trains, and equips forces for the 21st century. Every aspect will be affected by the exponential growth in accessibility to information.

New technological capabilities drive different leadership styles and decision-making strategies. A constant struggle persists in leadership styles between hard-line centralized control on one side versus softer influence and trust associated with decentralization on the other. As technology provides new capabilities, leadership styles and attitudes must adjust to fit the new capabilities.

What can our leaders do to capitalize on the Information Age? The simple answer is threefold: provide good influence, build operational trust, and leverage network enterprises. Leaders must learn the skills to influence their subordinates, peers, and even their commanders, if they want to hold power in the Information Age. This paper delves into ideas that address these challenges to leadership. It provides specific ways to shape network culture and "operationalize" trust in networks for effective operations.

Introduction

The information revolution in military affairs (RMA) exists and is happening now. Advances in information technology create new capabilities, and those capabilities affect how we work, live, and even fight wars. This paper discusses how military leaders can change the way it plans, operates, educates, organizes, trains, and equips forces for the 21st century. Every aspect will be affected by the exponential growth in accessibility to information.

New technological capabilities drive different leadership styles and decision-making strategies. A constant struggle persists in leadership styles between hard-line centralized control on one side versus softer influence and trust associated with decentralization on the other. As technology provides new capabilities, leadership styles and attitudes must adjust to fit the new capabilities.

With the exponential growth of networking capabilities in the 21st century, everyone will have much greater access to information. Knowledgeable individuals within organizations will want to be the decision-makers. The military is no exception. As the military forges new paths implementing the concepts of network centric warfare and network enabled operations, several issues will arise affecting leadership, doctrine, force structure, and command and control.

Due to the uncertainties of near-future threats, the United States needs to be prepared to fight any enemy, anywhere, at any level of conflict, from enforcing sanctions and capturing terrorists, to full-scale theater operations and nuclear war. The U.S. Military requires agile and adaptable command and control networks to respond to any given situation. This will require synergistic networks to provide the accuracy, relevance, and timeliness of information under an increased operations tempo. The organization to meet these needs requires a leadership style characterized by influence and trust.

Background

At the dawn of the 21st century, a network architecture has emerged that supports both the internet and intranets. As individuals and organizations populate the networks with information, the information superhighway takes shape. Accessibility to the web has greatly improved. People are no longer dependent on single expensive servers at organizational headquarters to gain access to information. By subscribing to one or more internet service providers (ISP), users now have multiple access points to enter the web whether at work, at home, or even at Starbucks. Besides having multiple access points, the speed at which we can retrieve or broadcast information has greatly increased. Twenty-eight kilobyte modems have been replaced with high speed DSL and cable modems for quicker access at home. WiFi provides high-speed wireless data connectivity throughout airports, universities, and shopping malls. Now, not only do individuals have multiple ways of receiving and sending data, they can do so at greater than 1,000 times the speed of previous systems. This equates to an exponential gain in accessibility to information.

Military organizations can share information making it possible for decision-making to occur at all levels within the chain of command. Thanks to the web structure, multiple redundant paths for information sharing are possible. Decision-making can become decentralized and no longer have to occur in series. But decentralization in the 21st century is different from that of the past where lower level forces were ignorant of the status of other forces. Because of the power of networks, lower echelon troops have access to the information to make better decisions. With high quality information, competent troops, trust in operations, and a clear understanding of command intent, it is possible to empower subordinates with greater decision-making responsibilities than ever before. This is the aim of Network Centric Warfare (NCW) self-synchronization as originally envisioned by Admiral Cebrowski, the father of NCW.[1]

The webbed network of multiple organizations creates "power to the edge." What that means is organizations that are on the edge of the command and control network, the effectors, can now gain access to the specific information they need, make their own decisions, and act upon those decisions. The networks enable operations to take place in a decentralized manner. This process of edge teams conducting their own decentralized decision-making and action within the context of the command intent is called self-synchronization. Because multiple decisions can occur simultaneously, the tempo of operations can increase exponentially. This exponentially increases the speed of operations by increasing both efficiency and effectiveness.

In this latest decade, peer-to-peer relationships across organizational lines can occur with ease. In fact, organizational lines blur as people can quickly and efficiently communicate with anyone at any level, both internally and external to their own group. Moreover lower-level workers have access to spreading their own words, thoughts, and ideas. The commanders do not have the same level of control as in the past because of the difficulty in trying to control information flow or access. Since this is a major source of hard power, their power dwindles as subordinates gain access to information from multiple, redundant sources outside normal channels. Instead, commanders must rely more on influencing others and building trust among entities.

What To Expect

As members of organizations realize the potential of the new communications technology, several changes will occur. Many of these trends have already materialized. Here are a few examples of what to expect:

- Decision Makers will be Younger – As technology improves, routine tasks become automated. The airline industry's transition to computerized check-in kiosks is an example of simple service related jobs disappearing. With fewer jobs that require simple tasking, entry level workers will take on the tasks that computers have not mastered, specifically complex decision-making. If you are not a decision maker, you might as well be automated.

[1] Network Centric Warfare and Self-Synchronization are explained in detail in the CCRP books entitled *Network Centric Warfare: Developing And Leveraging Information Superiority* (Alberts, Garstka, and Stein) and *Power To The Edge: Command, Control In The Information Age* (Alberts, Hayes).

- Organizational Standing Becomes Less Relevant – As agile networks form and dissolve to support operations, so will ad hoc organizations, such as Joint Task Forces. Standing organizations, regardless of where they fit in a wire diagram, will be relevant only depending on what capabilities they bring to the table. If they add benefit, they will be used; if not, they will be overlooked. Examples of unconventional tasking are the Air National Guard and Coast Guard taking on important roles in foreign wars.
- Lower Ranking People Will Have More Power – This power comes directly from the network. To maintain control of subordinates, some commanders may be tempted to control the flow of information. However, information denial is unrealistic when redundant multi-path networks are formed, especially when the new soldier depends on the network to accomplish his mission. There will always be ways around roadblocks on the information superhighway. With access to information, lower ranks will be better informed than past generations were. This leads to better decisions and ideas from younger people. When they want their ideas heard, they can disseminate them in many more directions than just the chain of command. With the internet, everybody has access to a soapbox.
- Innovative Projects Will Surface in the Field Without Certification – With unlimited access to knowledge and information, ideas will rise from unexpected sources. Edge organizations will create new capabilities or transform existing systems for new purposes. If they are unsuccessful convincing superiors of the benefits, they will advertise them to their peers outside organizational lines. The Battlefield Universal Gateway Equipment (BUG-E) is an example of this kind of project. This equipment tied together several data links enabling joint forces to share position data across the Iraqi western desert. However, while the BUG-E was assembled and fielded in time for the war, the Air Staff requirements approval process took several months longer.

Evidence We Are On Our Way

There are several cases where progress is occurring in the Information RMA direction of the 21st century. For example, because of the emphasis on coalitions and the necessity to conduct military operations other than war, the Joint Requirements Oversight Council (JROC) has proposed changing the Joint Publication's Principles of War to replace Unity of Command with Unity of Effort. This is in response to the "evolving fundamentals of 21st century joint warfare and crisis resolution." [2]

Another example is the number of non-certified networking technologies that show up and are immediately integrated into operations. These relatively inexpensive "garage projects" do not follow the normal programmatic acquisition and budgeting cycle restraints. Instead, units salivating for the new equipment will not wait for the programmatic bureaucracy to incorporate new capabilities.

[2] JROC Memorandum 022-03, "An Evolving Joint Perspective: US Joint Warfare and Crisis Resolution in the 21st Century." Directorate for Operational Plans and Joint Force Development, Joint Staff, 28 January 2003.

A recent action by the Marines in Fallujah is one of the most telling stories of the change towards network organizations that cannot be stopped. In May 2004, during the height of the uprising in Fallujah, Iraq, ABC News reported a story about a Marine company in Fallujah taking matters of communications into their own hands. According to ABC, this company of marines determined they needed communications among all team members to fight in an urban environment. Pentagon leaders had withheld radios from the lower ranks due to concerns with radio bandwidth overload and security. The commander suggested that each soldier email home to ask for Motorola Talkabout radios. One marine's mother, a waitress in Texas, collected $8000 from patrons and went to RadioShack to buy the Talkabout radios for the entire company. This is another example where if asking up the chain for communications support was getting "shot down" (so to speak), then they would solve their requirements by other means. [3]

Network Leadership Strategy and Tactics: How to Prepare For the 21st Century Networked Organization

What can our leaders do to capitalize on the Information Age? The simple answer is threefold: provide good influence, build operational trust, and leverage network enterprises.

At a recent workshop discussing the future of network centric warfare, the following statement was made at the outbrief:

> Leadership development must be focused on developing leaders who have knowledge and skills that are relevant to the information age and competent to the times. Leadership will need to deal with the dispersion of authority and responsibility across the set of temporary and informal organizational structures that will evolve under collaboration.[4]

Leaders must learn the skills to influence their subordinates, peers, and even their commanders, if they want to hold power in the new network environment. The rest of this paper delves into ideas that address these challenges to leadership. It provides specific ways to shape network culture and "operationalize" trust in networks for effective operations.

Leadership Strategy

Influence is the key to successful leadership in the new networked organizations. Leaders need to communicate a clear, consistent message to subordinates to ensure they direct their efforts in a manner that aligns with the overall strategy. In addition, because

---

[3] ABCNews.Com. "Priority Mail: Determined Mom Helps Soldier Son Fighting in Iraq" By Mike von Fremd. Mansfield, Texas. May 19, 2004.

[4] Net Centric Joint Functional Concept Workshop Outbrief. July 2004., http://www.netcentricfcb.org/NCFCBWorkshop3.html 18 November 2004

individuals are knowledgeable, they will not blindly follow orders as easily as in the past. They demand an understanding at the lowest echelons so they can best decide the appropriate actions to carry out orders. Furthermore, they must believe in and pass on to others the same message that the leaders are espousing. Therefore, it is critical to have clear executive vision and command intent for any operation. Included in this must be the operational priorities, functional doctrine, operational perspectives, proper guidance, ethical standards, appropriate rules of engagement, and well-defined roles and accountabilities.

Leaders must create the vector. With the rise of networking information, innovative capabilities will rise from the bottom-up, providing the magnitude. Leaders must provide the direction – the vision – to drive the organization forward. Gareth Morgan writes, "Transformational leaders need to transmit their vision into reality, their mission into action, their philosophy into practice….Alterations in communication, decision-making, and problem-solving systems are tools through which transitions are shared so that the visions become a reality."[5]

The leader and the entire organization must commit to the vision daily. By setting the standard for the organization, he will provide the expected framework for his subordinates to follow. Lower-level troops want to understand the significance of their orders. They need to know how their work fits into achieving the mission. Effects based operations consider how daily tasks align with the bigger operational goal. If a Stryker brigade is to attack a target, the brigade members should know how that target fits in with the overall objectives of the mission. In a decentralized environment, it is important to provide, not only the goal, but also the ethical manner and approach to reach that end-state.

It also takes trust for networked forces to function efficiently. As operations become more complex, no single entity can do the job alone. Interdependencies become more important. Linking information from multiple sources adds another degree of complexity to an already complex mission. The more entities that are involved with sharing information and dividing tasks, the more the requirement for trust grows. Operational Trust is the lynchpin in all networked operations.

Generals and Admirals must shift into the "mentor" mindset. Dr. Thomas Malone, founder and director of the Massachusetts Institute of Technology Center for Coordination Science, suggests a new kind of C2 – instead of command and control, at the strategic level, shift to coordinate and cultivate.[6] The new generation of soldiers, will not just follow orders, they will make decisions. Unfortunately, even if they are not competent, they may still think they are; plus they will have the power and ability to make bad decisions. Every soldier, sailor, and airman should be given a course in critical

---

[5] Morgan, Gareth, *Creative Organization Theory*, p.165.

[6] Malone, Thomas, *The Future Of Work: How The New Order Of Business Will Shape Your Organization, Your Management Style, And Your Life*. pp. 129-131.

thinking and ethical decision-making.[7] It is essential that they have the skills to make good decisions. Since people's perspectives change as they gain experiences in life, this course should be repeated every few years in an effort to "re-cage" good decision-making characteristics.

It is also important to check your own situational awareness (SA). Some commanders believe they always know the right answer. Streaming video in the CAOC only serves to reinforce that belief. However, the insidious problem with SA is that people do not recognize when they have lost it until they regain it. Also, they are unaware of the pieces of information that are missing. Once a commander makes his decision, he has a strong tendency to stick with that solution, regardless of further evidence to suggest a better solution. The tendency to disregard negative information, called a confirmation bias, has led commanders and their troops on to horrific blunders. Commanders must be willing to hear dissension and negative information to keep their SA in check. Furthermore, although a commander sitting in the operations center may have access to hundreds of information sources, he still does not have the complete picture of the ensuing battle on the frontline. Dr. Milan Vego, professor of Joint Military Operations at the Naval War College, concludes: "It is an illusion to think that senior leaders can grasp tactical intricacies better than their subordinates. Nor can they take advantage of their fleeting opportunities on the ground."[8]

We expect decentralized decision-making to be effective, but we have not given the edge organizations the tools yet to perform this task. Leaders must make an effort to get the frontline warfighter what he needs, instead of bringing all the new technology to the CAOC. To make *informed* decisions, warfighters need to have reliable conduits for information flow. Many systems have been developed that provide specialized needs to small units. However, they were created without considering how they will interoperate with other systems. These systems carry the brand "stovepipe" to portray their characteristic single source, single direction information flow. Many military leaders would like to crush these programs, but have a difficult time because the individual system is so well liked by the community that uses it. Instead, leaders should encourage development of simple translators and connectors to provide information cross-flow. The stovepipes are not the problem; it is the lack of venting between them that causes havoc. By cross-flowing data across multiple systems, operators have a greater possibility of receiving the information and thus making better decisions. This also applies to more tacit information. Leaders should encourage cross-flow of tactics, techniques, and procedures across joint boundaries. As more ideas are shared, new improvements will arise. This innovation should be encouraged.

Finally, turn those "Iron Majors" into "Golden Majors." In a speech given at the Naval Industry Conference in 2004, Admiral Ed Giambastiani, Commander USJFCOM,

---

[7] Professor George Lober's class on Critical Thinking and Ethical Decision-Making (NS4710) at Naval Postgraduate School in Monterey is an excellent example of the coursework and discussions that should be proliferated to the entire Department of Defense.

[8] Vego, Milan N. "Operational Command and Control in the Information Age," Joint Forces Quarterly. Issue 35. 2004. pp.100-107.

remarked: "Examples of [transformation concepts] …, I am happy to report, are being deployed right now in the combatant commands – our primary JFCOM customers. But I will tell you that the process is painful and slow. We have found that there is great agreement on the process-and-products of joint transformation at the most senior level and down among the troops who have fought as a joint force. They 'get it.' But the 'iron middle managers' – the majors, lieutenant colonels and colonels that we have trained to protect service programs, authorities and resources – pose a significant challenge."[9] Instead of allowing iron majors to thwart innovation, leaders should get them onboard with the idea early in the process. Then they will be the vehicle to sell new transformational concepts to the troops.

Influence Techniques – Specific Tools for Soft Power

Throughout this paper, I have stressed the need to develop skills to exert softer power by focusing on influence instead of direct control. However, so far there have yet to be any specific methods, only generalities. The next several paragraphs will discuss some specific techniques to persuade superiors, peers, and subordinates to follow your vision and direction. These techniques are discussed in detail in the book, *Influence: The Psychology of Persuasion*, by Dr. Robert Cialdini.[10] Although this book is mainly directed at the consumer and marketing audience, the same techniques can also apply to situations where military leaders must persuade others. However, while many of the examples in the book show the abusive power of influence, these techniques are offered in hopes they are used for good, not evil.

Provide a reason

According to Cialdini, people are more willing to do what you ask if they know the reason. As subordinates gain access to other sources of information, they will be less likely to blindly follow orders. They want to know why. But we may underestimate the power of this method of persuasion. In some cases, even playing the trump card, "Because I said so," may be a valid enough reason if used only sporadically. In 1978, Dr. Ellen Langer conducted an experiment measuring the power of the word "because." The results are clear in the following excerpt:

> Langer demonstrated this unsurprising fact by asking a small favor or people waiting in line to use a library copy machine: "Excuse me, I have five pages. May I use the Xerox machine because I'm in a rush?" The effectiveness of this request plus reasons was nearly total: 94 percent of those asked let her skip ahead of them in line. Compare this success rate to the results when she made the request only: "Excuse me, I have five pages. May I use the Xerox machine?" Under those circumstances, only 60 percent of those asked complied. At first glance, it appears that the

---

[9] Giambastiani, Ed, Commander USJFCOM, in remarks for the Naval Industry Conference, 4 August 2004, http://www.jfcom.mil/newslink/storyarchive/2004/sp080404.htm. 1 September 2004.

[10] Cialdini, Robert B., *Influence: The Psychology of Persuasion*. New York: William Morrow, 1993.

crucial difference between the two requests was the additional information provided by the words because I'm in a rush. However, a third type of request tried by Langer showed that this was not the case. It seems that it was not the whole series of words, but the first one, "because," that made the difference. Instead of including a real reason for compliance, Langer's third type of request used the word because and then, adding nothing new, merely restate the obvious: "Excuse me, I have five pages. May I use the Xerox machine because I have to make some copies?" The result was that once again nearly all (93 percent) agreed, even though no real reason, no new information was added to justify their compliance."[11]

Gain Commitment

By simply gaining commitment from others, they will likely remain loyal to the cause and follow through with the mission. An early lesson in basic training is the importance of integrity. Once a soldier gives his word, he will consider it a lapse of character to change his mind. According to Janus and Mann, prominent social psychologists, once people make a difficult decision, they become more confident in that decision.[12] This phenomenon, called bolstering, has been documented even in horseracing, where bettors feel more confident in their horse after they make their bet.

One way to gain that commitment is to start small and build. For example, the Chinese communists used this foot-in-the-door approach of indoctrination in the prisoner of war camps during the Korean War.[13] While this example is negative in context, it shows the power of this approach to persuasion. Starting with asking prisoners to agree with simple, harmless statements like, "The United States is not perfect," led to further admissions where prisoners gave specific examples of U.S. imperfections. Eventually, they found themselves entering essay contests glorifying communism. By actually writing the essay, not just saying it, the concepts became further engrained into the prisoners' minds, until they truly internalized the benefits of communism. Repeated short-term compliance can often lead to long-term cultural shifts. Moreover, the prisoners' written statements could be shown to others, thus convincing fellow prisoners it was acceptable to enter the essay contest.

Convincing several people to commit to a cause has a two-fold benefit. First, people are much more willing to go along with something if they see others doing it too. Just as a crowd of people looking at the sky causes a passerby to look up also, a team member is likely to concur if he sees the rest of the team conforming. The second benefit is the domino effect leading to a "tipping point."[14] By convincing people to internalize

---

[11] Cialdini, Influence: *The Psychology of Persuasion*, p. 4.

[12] Lebow, Richard. Between Peace and War: The Nature of International Crisis. The Johns Hopkins University Press. Baltimore, Maryland, 1981. pp.104-107.

[13] Cialdini, pp. 69-80

[14] Gladwell, Malcom, *The Tipping Point: How Little Things Can Make A Big Difference*, Boston: Back Bay Books, 2002. This book explains in detail the process and requirements to reach a tipping point.

an idea, they become the new spokesmen, spreading the idea at an exponential rate. Once a concept is adopted by enough people, it reaches a tipping point where acceptance by the masses is inevitable. Consider how the idea of "targeting specific people" was completely unacceptable as a form of warfare before the war on terror began. By 2004, both presidential candidates were liberally using the phrase "hunt them down and kill them" in campaign speeches to cheering crowds. This example shows the snowball effect that can occur when an idea hits its tipping point.

Start Early

Try to introduce your idea before other ideas are on the table. Garner consensus in the early planning stage. That way the others become the alternatives, which require significant scrutiny before the first idea can be ruled out. The best psychological operation is one that makes the first impression. The reason this is such an effective tactic is due to what Robert Jervis calls "cognitive consistency." Jervis states, "The principle of consistency helps us to make sense of new information as it draws upon our accumulated experience, formulated as a set of expectations and beliefs. It also provides continuity to our behavior."[15] We look for confirming evidence and tend to disregard disconfirming evidence. The earlier an acceptable idea is embedded into our brains, the more likely we are to find further justification that it is correct.

However, beware of your own irrational cognitive consistency in decision-making. Jervis continues, "The pursuit of consistency becomes irrational when it closes our minds to new information or different points of view….Persistent denial of new information diminishes our ability to learn from the environment." Someone who becomes over confident in his beliefs may tend to disregard experiences causing misperceptions and irrational decision-making. In other words, be willing to accept others' ideas if they are better than yours.

Benefit from Reciprocity

Take care of your troops and they will take care of you. By giving to others, not only will they appreciate it, but they will also feel indebted to you. Consider the marketing campaigns where free address labels are sent to your house along with a letter asking for a donation. Even though the labels were unsolicited, many people feel that they must reciprocate for the gift even if they never use the labels. Nice deeds build a sense of obligation and loyalty. Favors beget other favors; this is exactly how political parties build alliances to gain a majority vote. While most people do not like to admit being a part of political games, they should realize it is an irrepressible outcome of network organizations. Therefore, you may as well accept it and be good at it. Furthermore, reciprocity can have an escalating effect. After all, how much do you donate for fifty cents worth of address labels?

---

[15] Lebow sites Robert Jervis from *Perception and Misperception in International Politics*. Princeton University Press. Princeton, New Jersey, 1976. pp 17-42.

Appearance Builds Respect

Regardless of whether or not it is fair to assess someone's capabilities based on personal appearance, several studies have proven people are more willing to listen to someone who is attractive. According to Cialdini, "we automatically assign to good-looking individuals such favorable traits as talent, kindness, honesty, and intelligence." Furthermore, we do this without being conscious of it.[16] Personal appearance can reflect much more than just good genes. It is an expression of your health, fitness, attention to detail, and ability to take care of business. In the military, even more so, troops will be more inclined to trust and respect a commander who is athletic and in good shape, even if his job involves only sitting behind a desk. If you are fat and out of shape, the thought process of others is, "How can you take care of the mission and the troops if you can't even take care of yourself?" In 2004, the Chief of Staff of the Air Force General John Jumper introduced a new program, "Fit to Fight," which specifically aims at creating a healthier, more respected, force.

Besides appearance, mannerisms can also be an effective influencing tactic. Solid eye contact, good posture, and a firm handshake give an immediate first impression of an ethical, honest, upfront person. These are all examples that are difficult to accomplish across dispersed units through communication networks systems as currently designed. Therefore, the few opportunities for face-to-face contact become even more important. Excitement in a project can be infectious to others. By sounding authoritative, people will believe you are an authority. On the other hand, stuttering or sounding unsure will make people question your ability to command troops or manage a project. The same impression can carry forward to email with bad spelling and grammar. You will have a difficult time convincing even subordinates to listen to you if you cannot command their respect.

Build a Cohesive Team

In network enabled operations, team members will come from multiple organizations and form quickly to meet the given challenge. Any team will work better if they are a cohesive force. One method to influence this is to get "buy-in" from all team members on the mission, tasks, roles, contracts, expectations, and end-state. Find similarities or common interests; having common experiences can help instill trust. Create a symbol that is specific to the team. Shared symbols are a simple way to build pride and cultural unity in a newly formed team. As the team performs well, that symbol becomes recognized as part of the reputation of the team. Consider how emblems such as a Special Forces badge or a Weapons School graduate patch instills pride in all members, or how others reverently call test pilots "golden arms" when they see the patch on their flightsuit sleeve.

Choose the Technique to Fit in Context

Every situation and every person is different. There is no all-encompassing technique that will always work. It is important to use the right influence technique for

[16] Cialdini, p. 171.

the right situation. Do your research beforehand; strategize a plan to sell your plan. Know your target audience and use an approach that will produce the desired behavior. Whether the right approach is a carrot or a stick, a good leader will know which method will be the most effective on each specific target. If you need buy-in from a specific individual who has reservations, get the person to explain what the specific issues are. That way you can address each concern and win support.

Building Operational Trust

It takes trust for networked forces to function efficiently. As operations become more complex, no single entity can do the job alone. Interdependencies become more important. Linking information from multiple sources adds another degree of complexity to an already complex mission. The more entities that are involved with sharing information and dividing tasks, the more the requirement for trust grows. Operational Trust is the lynchpin in all networked operations.[17]

The new generation of soldier, sailor, airman, and marine wants to know and understand why their squadron leader made the decisions he made. As teams become smaller and more dispersed, it is even more critical to trust the directions that come from geographically separated commanders if the teams are expected to follow orders. However, people build trust through experience and face-to-face contact with each other. Fighter pilots build trust with other fighter pilots by discussing the afternoon's training sortie over a beer together in the squadron bar. With geographically dispersed, networked forces, there is no opportunity for this.

To add to the problem, both network centric warfare and the future generation network enabled operations rely on interdependency for their success. This interdependence *requires* a level of trust to be successful. The authors of the book, *Power To The Edge*, specifically state a necessary condition for self-synchronization is "Trust in the information, subordinates, superiors, peers, and equipment"[18]

Meeting this condition asks a lot from military leaders, decision-makers, operators, effectors, managers, industry – basically, everyone who is in some way involved with networking operations. Everyone knows that teams that work together can be more efficient, and a key aspect to working as a team is trusting one another. But trust is not something that can be ordered. You cannot expect people to trust each other just because someone directs them or it is part of the doctrine. Yet many people that discuss trust just expect it to be readily available regardless of its earned value. Instead, trust needs to be examined from a realist's perspective to determine the factors it relies on. Perhaps, by concentrating on improving those factors in a network centric environment, we may be able to increase the level of trust among entities.

---

[17] Operational Trust was discussed in detail in my paper presented at 9th ICCRTS. "Operational Trust: A New Look at the Human Requirement in Network Centric Warfare" http://www.dodccrp.org/events/2004/ICCRTS_Denmark/CD/papers/022.pdf

[18] Alberts and Hayes. *Power to the Edge.* C4ISR Cooperative Research Program (CCRP), Washington, D.C. 2003., p. 27.

Trust is a bet that an entity, which you cannot control, will meet expectations that are favorable to your cause.

Operational trust is the trust that is required from every person and earned by every entity to accomplish an endeavor.

Complex operations involve several entities, and this requires a certain level of interdependence. Each relationship requires a level of trust in order to complete the entire mission. By sharing knowledge and dividing workload, we become more efficient at accomplishing the mission. However, the more we interlink and share knowledge to accomplish a task, the more dependent we become on entities we do not necessarily control. As operations become more complex, no single person or even small team can accomplish all tasks required of a mission. At this point, trust is not only desired, but required to complete the mission.

Operational trust comes from a variety of perspectives. Warfighters must trust their peers, commanders must trust subordinates, and subordinates must trust their commanders. Operators must trust the equipment, and all players must trust in the tactics, techniques, and procedures. Moreover, the leaders of the overall operation must trust in the players to accomplish the endeavor in an ethical manner. In other words, a person has no choice but to give a level of trust to certain entities (people, objects, systems) in order to complete his mission.

The key difference in operational trust compared to other types is that this level of trust is required, not just desired. Otherwise, the mission success is either not achievable or, at best, completely inefficient. This is trust from a realist perspective. We cannot expect that by simply advocating that everyone trust each other, that operations will become more efficient. The reason to extend trust is because it is required to accomplish the goals in an efficient manner. However, by discovering ways to make trust assessments more precise, we can make decision-making easier and more correct. This will, in turn, make it possible to increase the efficiency and effectiveness of the overall operations.

Three steps are involved in making trust based decisions. 1) Determining the need to trust; 2) Assessing the risk; and 3) Changing the odds. Better trust based decisions will lead to higher levels of operational trust. This, in turn, leads to more efficient and effective operations.

Step 1. Determining the Need to Trust: *Do I have to make a bet?*

Three factors play a role in determining the need to trust. **Importance of my task:** This first step is to determine how critical my own task is in the overall success of the operation. How much are others depending on me to complete my task successfully? How trustworthy do I need to be so that others can trust me? **Necessity of dependency:** Do I need help to accomplish my tasking? Whom and what do I depend on to complete my mission? **Amount of dependency:** How critical is each of these dependencies? Do I have alternatives?

Step 2. Assessing the Risk: *What are the stakes of the bet?*

It is important to recognize the potential negative consequences of misplaced trust in the wrong entity. Depending on the severity of the consequences, this will affect the decision to place trust in certain entities or continue to look for other options. The amount of risk can be determined using a risk assessment matrix, assessing the likelihood that the trustee will fall short of your expectations and the severity of those consequences. Figure 1 is a simple example of a risk assessment matrix:

Risk Matrix	Probability of Occurrence				
Severity of Negative Consequences		Highly Unlikely	Not Likely	Likely	Highly Likely
	Minor	Green	Green	Green	Yellow
	Major	Green	Yellow	Yellow	Red
	Catastrophic	Yellow	Red	Red	Red

Figure 1. Risk Assessment Matrix

Step 3. Changing the Odds: *Can I make a safer bet?*

There are two types of trust – blind trust and reasoned trust. Blind trust is the equivalent of making an uninformed bet. The blind trustor has no reason to believe the trustee will act honorably; however, she places her trust in that person or entity without hesitation. Reasoned trust, on the other hand, is the equivalent of making a smart bet. Having a reason to trust makes it easier to make the correct trust-based decisions. For example, if Alice goes to the racetrack and bets on a horse simply because it wears a purple jersey, that would be a dumb bet. However, if Alice does her research and finds that the horse with the purple jersey has won every race that year and is the offspring of Seattle Slew, then she has a good reason to bet on that horse. By having a reason to trust, not just having blind trust, people can make smarter decisions.

Observations obtained while living, working, and deploying with marines, fighter pilots, and special forces soldiers, suggest that this group, in general, has a very low baseline for blind trust. Fighter pilots tend to trust only other fighter pilots. Special Forces soldiers trust their team members. The marine motto, "Semper Fi" (always loyal) aims to provide a culture of trustworthiness, but does not create a trusting attitude towards non-marines. In other words, all others must earn these warriors' trust before they will make decisions based on trust. Alfred Lord Tennyson's famous quote from his poem, "The Charge of The Light Brigade," which says, "Their's not to reason why, Their's but to do and die,"[19] is disappearing from the military mindset. Instead,

[19] Lord Tennyson, Alfred, "The Charge of the Light Brigade," *Poems of Alfred Tennyson,* J. E. Tilton and Company, Boston, 1866. http://eserver.org/poetry/light-brigade.html. 29 November 2004. The rest of this stanza is: *"Forward, the Light Brigade!" Was there a man dismay'd? Not tho' the soldier knew Someone had blunder'd: Their's not to make reply, Their's not to reason why, Their's but to do and die: Into the valley of Death Rode the six hundred.*

individuals need a reason to trust. Therefore, it is important to facilitate a means to gain reasoned trust in military operations.

Some ways to increase reasoned trust include: 1) increasing situational awareness; 2) having methods to verify "trusted" information of entities, both during and post-execution; 3) creating opportunities to build past experience with the "trusted" entities; 4) having information to provide indirect reputation; 5) reducing the amount of lost control; 6) finding a common cause or objective; and 7) increasing the likelihood of future interaction.

This leads into the next point: Know when *not* to trust. Operational trust is not about learning to trust each other – it is about making good decisions based on an accurate assessment of trustworthiness. Along that vein, we can make more decisions to act in parallel if we can create an environment of trust. This will produce faster, more efficient operations, which is, of course, the end goal. However, blindly placing trust in an incompetent person causes negative ripple effects to everyone who depends on the success of that element of the mission. If the risk assessment matrix indicates high risk, it is important to remember to analyze other options.

Fostering Network Enterprises

Listed below are a few ideas that could bring about more efficient operations in future network enterprises. These concepts are listed here as a spring board for future thoughts. By paying attention to the attributes associated with trust and influence, military organizations can become more efficient network operators.

Create Joint Mission Capability Packages

When U.S. forces go to war, they fight jointly, but they rarely train that way. There are limited opportunities to train as we fight. However, planning staffs expect that a "plug-n-play" force will be prepared to operate together with effective results. The actuality is an ad hoc group with no established reason to trust, a misunderstanding of cultural barricades, and inefficient operating conditions. Furthermore, these problems provide justification for theater commanders to centrally control the mission events. Instead, we should create small joint teams that perform a complete end-to-end capability thread. These teams will train *and* deploy together.

Colonel Lou Durkac, USAF Air Combat Command, recently applied this concept by proposing what he called a Joint Mission Capability Package for Synchronized Air-Ground Operations at the Coalition Ground Forces Light Armored Vehicles Conference.[20] He addressed the problem that light armor vehicles (e.g. Strykers) require air power to engage heavy enemy forces and provide air defense. Airpower needs agile ground forces to dislodge heavy enemy forces and act as forward air controllers. By creating small teams of Strykers plus F-16C+s (which already have interoperable data

[20] Durkac, Louis M. "Stryker / F-16C+ Joint Mission Capability Package for Synchronized Air-Ground Operations." Presented at the IDGA Light Armored Vehicles Conference, Washington, D.C. 1 December 2004.

link and communications systems) that train together and deploy together, this force package will be ready to fight efficiently on Day One.

Create Competition Exercises

With mission oriented teams, training could involve an annual event where these teams compete against each other for "Top Gun" accolades. The benefits are three-fold. 1) Competition will inspire teams to train harder and work better together. 2) Competitive "Type-A" warfighters will create innovative new tactics to win events. Since the proof is in the award, these innovations can be quickly shared across the communities. And 3) Winners gain a recognized reputation as "the best of the best." When called into a combat theater, that reputation will deploy with them.

USSTRATCOM has continued the tradition from its predecessor, Strategic Air Command, of annual Guardian Challenge or Olympic Arena Events. At this tournament, each base sends their best missile launch and maintenance crews to compete for first place honors and base reputation recognition. This concept needs to be shared outside of the strategic nuclear forces community.

Create Reputation Scores

When direct experience is not possible, indirect reputation can help provide adequate reason to trust. What if every military member maintained a reputation score, similar to a credit score or an eBay score? Perhaps they could be split to include capability, dependability, and security trustworthiness. Inputs would come, not just from experience and formal processes, but also from closed-loop feedback of peers, superiors, and subordinates. When new agile teams are forming, the team leader could use these reputation scores to build his perfect team. Furthermore, just as committed eBay sellers follow through on every sale, individuals would work harder to ensure their score remained unblemished.

Cultivate a Dedicated Infrastructure Force

The person responsible for all communications links in a theater of operations is called the Joint Interface Control Officer (JICO). Currently there are only a handful of qualified JICOs across all branches of service, and after gaining specific knowledge, they often return to their previous career fields. The job entails having a solid understanding of both the technical design and operational uses of several different communications networks. Because of the intricacy and speed of new technology, by the time they become truly capable JICOs, they move on to their next assignment.

In the Combined Air Operations Center, decisions depend on the network infrastructure, yet little thought or praise is given to the JICO cell when everything is operating correctly. (At the current state of technology, it is a miracle that the systems stay on line and function together as well as they do.) JICO teams are augmented with several civilian contractor experts to hold the web together.

However, if the network communications are such an important part of command and control, why do we not have our own organic capability to manage the infrastructure? We need to cultivate a JICO force as a specialty-coded career field and

take care to manage their careers. For example, the exceptional JICO, who created and held together the largest data-linked network to date for Operation Iraqi Freedom, was recently passed over for promotion. As one of a select few with the most operational experience in network infrastructure, he has since been sent back to his old career field.

Simplify the Process for Innovation

More and more people have great ideas, but what is the military process for turning the great ideas into real combat capability? Small communities have put procedures in place to share requirements and solutions within the community. For example, Air Combat Command holds its annual weapons and tactics conference to discuss requirements and upcoming capabilities. However, when an idea crosses joint boundaries, the method becomes lengthy, convoluted, and difficult to figure out. Furthermore, enlisted soldiers and officers alike do not know how to begin the process. The result is that the top flag officers will decide the warfighter requirements and solutions instead of the men and women on the forward edge. This is counter to the concept of letting capabilities bubble up.

Another similar example comes from recent first-hand experience. While conducting research for my thesis, I was sent an electronic copy for review of a draft concept document about the transformation to network operations along with directions for submitting comments. All comments required staffing through a general officer or equivalent for submission. It seemed ironic that the coordination process for a document about network transformation required a hierarchical approval procedure, thus countering what the document espoused in the first place. If we expect to encourage innovation, we need a well-defined simple process that everyone knows how to do. Perhaps we need to reinvigorate the Suggestion Form 1000 program for joint force applications.[21]

Visit the Squadron Bar

This statement is not meant to glorify alcohol. It is meant to give due reverence to the camaraderie and trust that develop on Friday afternoons. But it is more than mere friendship that forms. Some of the greatest ideas have come from collaboration after work hours, recorded on cocktail napkins. In Tucson, Arizona, Air National Guard pilots, frustrated with the amount of time it took to coordinate a laser guided bomb attack, concocted a new capability that took advantage of their new tactical data link equipment. Over a few beers, they designed a new technique to share all relevant targeting information and laser codes across the data link, resulting in cooperative precision attacks with increased confidence, reduced time, and minimal voice communications. The cocktail napkin design sped quickly through the requirements vetting process in time for the next software upgrade. The Cooperative Lasing Mode (a.k.a. "CLAM" Mode) was in the jet within the year.

---

[21] The Suggestion Form 1000 was a popular process in the late-1980s and 1990s where anyone could submit any cost-saving idea, from removing expensive missile caps before test launches to installing motion detector light switches in building to reduce electricity costs. If the program was adopted, the submitter received a check for 10% of the first-year cost savings.

Conclusion

Christopher Evans, a computer scientist and avid science fiction enthusiast of the 1970s, predicted in his book, *The Mighty Micro*, that the "computer revolution" would lead to globalization, the rise of the third world, the decline of communism, free and easy information exchange, and an end to war as we know it.[22] He was correct. Communications technology has led to the information revolution in military affairs. This is reshaping how we plan, operate, educate, organize, train, and equip forces for the 21st century.

Networking enables every individual from the top battle commander to the lowest echelon fighter to share information and gain increased situational awareness. However, sharing information allows individuals to feel capable of making their own decisions with increased confidence. Rank within a hierarchical organization becomes less relevant as a source of power, as subordinates question orders or find ways around roadblocks in the chain of command.

Therefore, leaders must create the vector – the direction – to drive the organization forward. Commanders must communicate a clear, consistent message that includes (but is not limited to) command intent, guidance, objectives, operational priorities, rules of engagement, and ethics. Operational trust is the lynchpin for networked operations. Leaders must learn the skills to influence their subordinates, peers, and even their commanders, if they want to hold power in the Information Age.

Network Centric Warfare and Network Enabled Operations provide the framework for integrating information technology into the battlespace. While the debate regarding how best to operate in a networked environment continues, both camps clearly see the benefits of shared situational awareness. Consequently, it is crucial that we get the technology, and hence capability, to the warfighter in the field.

[22] Evans, Christopher, *The Mighty Micro*, Gollancz, London, 1979. Unfortunately, Mr. Evans died in 1979, before he had the opportunity to see his predictions materialize.

THIS PAGE INTENTIONALLY LEFT BLANK.

Expanded Bibliography (from full thesis text)

"Air Force Doctrine Document 1." (17 November 2003).

"Net-Centric Joint Functional Concept (Version 0.5) *DRAFT*." (1 October 2004).

"Apple-History.com" [cited 6 December 2004]. Available from http://www.apple-history.com/frames/.

"Brainyquotes. com." [cited 1 December 2004]. Available from http://www.brainyquote.com/quotes/authors/r/rosalynn_carter.html.

"The FY 1999 Defense Budget And Future Years Defense Program, Chapter 21 " [cited 6 December 2004]. Available from http://www.defenselink.mil/execsec/adr98/chap21.html.

"Operation El Dorado Canyon." [cited 26 October 2004]. Available from http://www.globalsecurity.org/military/ops/el_dorado_canyon.htm.

"President George H.W. Bush's Address Before A Joint Session Of The Congress On The State Of The Union. 28 January 1992." in Reprinted on C-SPAN.org [database online]. Available from http://www.c-span.org/executive/transcript.asp?cat=current_event&code=bush_admin&year=1992

"The Sontay Raid." [cited 26 October 2004]. Available from http://www.psywarrior.com/sontay.html.

Air Force Experimentation Office. "Joint Expeditionary Force Experiment (JEFX) 2004 Quicklook Results and Initial Recommendations." (September 2004).

Alberts, David S., John Garstka, and Frederick P. Stein. *Network Centric Warfare: Developing And Leveraging Information Superiority.* Washington, DC: National Defense University Press, 1999.

Alberts, David S., and Richard E. Hayes. *Power To The Edge: Command, Control In The Information Age.* Washington, DC: CCRP Publication Series, 2003.

Arquilla, John, David F. Ronfeldt, United States. Dept. of Defense. Office of the Secretary of Defense, and National Defense Research Institute. *In Athena's Camp : Preparing For Conflict In The Information Age.* Santa Monica, Calif.: Rand, 1997.

Arquilla, John, David F. Ronfeldt, United States. Dept. of Defense. Office of the Secretary of Defense, Rand Corporation, and National Defense Research Institute. *Swarming & The Future Of Conflict.* Santa Monica, CA: Rand, 2000.

Arquilla, John, David F. Ronfeldt, United States. Dept. of Defense, and National Defense Research Institute. *The Advent Of Netwar.* Santa Monica, CA: Rand, 1996.

Axelrod, Robert M. *The Evolution Of Cooperation.* New York: Basic Books, 1984.

Builder, Carl H., Steven C. Bankes, Richard Nordin, United States. Dept. of Defense. Office of the Secretary of Defense, and National Defense Research Institute. *Command Concepts : A Theory Derived From The Practice Of Command And Control.* Santa Monica, Ca.: Rand, 1999.

Carter, Louis, David J. Giber, and Marshall Goldsmith. *Best Practices In Organization Development And Change : Culture, Leadership, Retention, Performance, Coaching : Case Studies, Tools, Models, Research.* San Francisco; Lexington, MA: Jossey-Bass/Pfeiffer; Linkage, Inc., 2001.

Cebrowski, Arthur K., and John J. Garstka. "Network-centric warfare: Its origin and future." *United States Naval Institute.Proceedings* 124, no. 1 (1998): 28.

Cialdini, Robert B. *Influence : The Psychology Of Persuasion.* Rev. ed. New York: Morrow, 1993.

Coram, Robert. *Boyd : The Fighter Pilot Who Changed The Art Of War.* 1st ed. Boston: Little, Brown, 2002.

Directorate for Operational Plans and Joint Force Development, Joint Staff. "An Evolving Joint Perspective: U.S. Joint Warfare and Crisis Resolution In the 21st Century." JROC Memorandum 022-03.

Durkac, Louis M. Colonel. "Stryker / F-16C+ Joint Mission Capability Package for Synchronized Air-Ground Operations " .

Edwards, Sean J. A. *Swarming On The Battlefield : Past, Present, And Future.* Santa Monica, CA: Rand, 2000.

Evans, Christopher Riche. *The Mighty Micro : The Impact Of The Computer Revolution.* London: Gollancz, 1979

"Remarks for the Naval Industry Conference." Washington, D.C. [cited 1 September 2004]. Available from http://www.jfcom.mil/newslink/storyarchive/2004/sp080404.htm.

Gladwell, Malcolm. *The Tipping Point : How Little Things Can Make A Big Difference.* 1st Back Bay pbk. ed. Boston: Back Bay Books, 2002.

Hayes, Robert H. *Operations, Strategy, And Technology : Pursuing The Competitive Edge.* Hoboken, NJ: Wiley, 2005.

Hehs, Eric. "USAF Weapons School, Training Weapon Officers at Nellis AFB, NV — April 1995." *Code One Magazine* (April 1995).

Jasper, Scott E. "Transforming Joint Warfighting Capabilities." *Joint Force Quarterly : JFQ*, no. 35 (2004): 69.

Jasper, Scott, and Michael Binney. "Joint Close Air Support Training Transformation." *Marine Corps Gazette* 88, no. 5 (2004): 71.

Jasper, Scott, and Michael Binney. "Joint Close Air Support Training Transformation." *Marine Corps Gazette* 88, no. 5 (2004): 71.

Jervis, Robert. *Perception And Misperception In International Politics.* Princeton, N.J.: Princeton University Press, 1976.

Kidder, Rushworth M. *How Good People Make Tough Choices.* 1st ed. New York: Morrow, 1995.

Kunz, Christine L. "OIF info 'brain'." *Airman* 47, no. 10 (2003): 22.

Lebow, Richard Ned. *Between Peace And War : The Nature Of International Crisis.* Baltimore: Johns Hopkins University Press, 1981.

Malone, Thomas W. *The Future Of Work : How The New Order Of Business Will Shape Your Organization, Your Management Style, And Your Life.* Boston, Mass.: Harvard Business School Press, 2004.

Malone, Thomas W., Robert Laubacher, Michael S. Scott Morton, and Sloan School of Management. *Inventing The Organizations Of The 21st Century.* Cambridge, Mass: MIT Press, 2003.

Morgan, Gareth. *Images of Organization.* 2nd ed. Thousand Oaks, Calif: Sage Publications, 1997.

Morgan, Gareth. *Creative Organization Theory : A Resourcebook.* Newbury Park, Calif: Sage Publications, 1989.

Nikolai, Douglas. "Centralized Execution of USAF Air and Space Forces: The Unspoken Trend of the Master Tenet (Classified and Unclassified Versions)." Ph.D. diss., September 2004.

Pierce, Terry C. *Warfighting And Disruptive Technologies : Disguising Innovation.* London ; New York: Frank Cass, 2004.

Rumsfeld, Donald H. "Transformational Planning Guidance." (April 2003).

Szewczak, Edward, and Mehdi Khosrowpour. *The Human Side Of Information Technology Management.* Harrisburg, PA, USA: Idea Group Pub., 1996.

Sztompka, Piotr. *Trust : A Sociological Theory.* Cambridge, UK ; New York, NY: Cambridge University Press, 1999.

Taylor, R. M. *Situational Awareness in Aerospace Operations* France: Neuillysur-Seine: NATO-AGARD-CP-478, 1990.

Tennyson, Alfred Tennyson, and Hammatt Billings. *The Poems Of Alfred Tennyson, Poet-Laureate Of England.* Boston: J. E. Tilton and Company, 1866.

"Network Enabled Capability." [cited 20 October 2004]. Available from http://www.iwar.org.uk/rma/resources/uk-mod/nec.htm.

Tichy, Noel M., and David O. Ulrich. "SMR Forum: The Leadership Challenge--A Call for the Transformational Leader." *Sloan Management Review (pre-1986)* 26, no. 1 (1984): 59.

Vandenbroucke, Lucien S. *Perilous Options : Special Operations As An Instrument Of U.S. Foreign Policy.* New York: Oxford University Press, 1993.

Vego, Milan N. "Operational Command and Control in the Information Age." *Joint Force Quarterly : JFQ*, no. 35 (2004): 100.

Von Fremd, Mike. "Priority Mail: Determined Mom Helps Soldier Son Fighting in Iraq " *ABCNews.Com* (19 May 2004).