

STRATEGIC LEADER COMMUNICATIVE SKILLS IN A NETWORK-CENTRIC ENVIRONMENT

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Within this complex environment, it is an inherent responsibility of the strategic leader to become a master of information and influence.

–Strategic Leadership Primer
U.S. Army War College

The nature of 21st century warfare provides unique challenges to leaders, both civilian and military, throughout an organization. Globalization, demographic shifts in an information-based society, the emergence of non-state actors, asymmetric threats, and rapid advances in technology are just a few of the significant trends leaders must address as they guide their organization to success. Depending on the leader's position, critical thinking, adaptive skills, and a greater appreciation for the fundamentals of influencing others will be necessary to guide diverse teams toward accomplishing complex tasks in an uncertain environment. The consequences of not accomplishing a mission at the strategic level place greater emphasis on direct and organizational level leader transitions to the strategic leader's environment.

Network-Centric Warfare (NCW) is an emerging capability that will affect strategic leaders. The lack of a common definition and perspective on the specific traits of this capability add to the already uncertain leadership environment. At first glance, NCW seems to apply technology to enable better communication. However the operational concepts of NCW will change the way strategic leaders influence others, and drive changes in the cognitive skills needed to make decisions. NCW's operational concepts offer great promise to increase military capabilities. Yet there are known and unknown disadvantages to its application.

There are countless references providing insights on senior leader competencies, skills, and attributes. Envisioning the future, consensus building, communication, managing national level relationships, and representing the organization are five key competencies. Although communication is an interpersonal competency found at all leadership levels, the communication process at the strategic level differs greatly from lower levels. Strategic leaders communicate directly and indirectly, both inside and outside the organization. Word choice, clarity of the message, and even the choice of communication channels are extremely important.

The purpose of this paper is to explore the affect that the NCW environment will have on a strategic leader's communicative skills. The paper will begin with an examination of NCW's objectives and characteristics, then explore future leader skills and competencies in relation to this developing capability. The components of the basic communication model serve as a tool to examine how automated information management systems influence communication, and highlight the advantages and disadvantages of electronically mediated communication channels. The paper will then analyze several studies aimed at improving communication to identify specific measures to mitigate the adverse affects of network-centric operations. Finally, the paper will recommend several solutions for strategic leaders to mitigate the adverse affects of network-centric operations on their interpersonal communication skills and effectiveness. The electronic mediated channels through which strategic leader selects to communicate have unique characteristics that facilitate communication and also introduce barriers in the process. Automated communication systems providing the dominant channel in a network-centric environment will adversely affect a strategic leader's interpersonal communicative skills. These affects require a deliberate communication strategy to mitigate their influence on a strategic leader's effectiveness.

Approximately two-thirds of a leader's time is spent communicating.¹ The relevancy of this topic for senior leaders is clear, and is magnified by the number of communication systems they must employ. *Aides de Commo* may be needed in the future to work the technical aspects of wireless computing, cellular phones, text messaging, and to

safeguard the long list of user names and passwords associated with each device. Additionally, the technical gear of today will soon be replaced by advanced devices. Decision support systems, expert systems, networks, and software applications enter the leader's environment every year. "Incremental improvements in existing high-tech systems yield substantial consequences for businesses and workers, creating both vulnerabilities and opportunities for both."²

The Network-Centric Environment

The Department of Defense's (DoD) transformation to a network-centric force has already started. The Office of Force Transformation is the lead agency for this effort and listed it as one of its top five goals back in October 2004.³ Defense Agencies, industry partners, Combatant Commanders, and Service Departments have initiated activity to bring this concept to an operational capability, influencing the conduct of warfare at all levels. The intent of this paper is not to discredit NCW, but to understand its characteristics, advantages, and disadvantages to enable leaders to make the most of its capabilities.

The 2003 Defense Planning Guidance describes a shift from an industrial age to an information age military in its transformation goals.⁴ This shift takes the armed forces from a platform-centric to a network-centric capability, which enables information sharing and a common operational picture across all levels of command. Strategic leaders who have progressed through the ranks based on their ability to master a platform-centric environment must adapt their skills to a network-centric environment. The challenge to this leader transition is an evolving definition of NCW.

Network-centric warfare (NCW) is characterized by the ability of geographically dispersed forces to attain a high level of shared battle space awareness that is exploited to achieve strategic, operational, and tactical objectives in accordance with the commander's intent. This linking of people, platforms, weapons, sensors, and decision aids into a single network creates a whole that is clearly greater than the sum of its parts. The result is networked forces that operate with increased speed and synchronization and are capable of achieving massed effects, in many situations without the physical massing of forces required in the past.⁵

An initial assessment of the Office of Force Transformation's description of NCW is that it relies heavily on technology. Communication over secure networks should be faster, and reduce or eliminate the need for people and systems to be near each other to pass information. While technology may dominant NCW capabilities, its description does attempt to address the human dimension of warfare. The concepts of shared battle space awareness, commander's intent, and decision support systems are related to the cognitive ability of people in the network-centric environment. Vice Admiral (Retired) Cebrowski also emphasized NCW's human aspect in his forward to *The Implementation of Network-Centric Warfare*. He states that networking is a human activity enabled by information technology.⁶

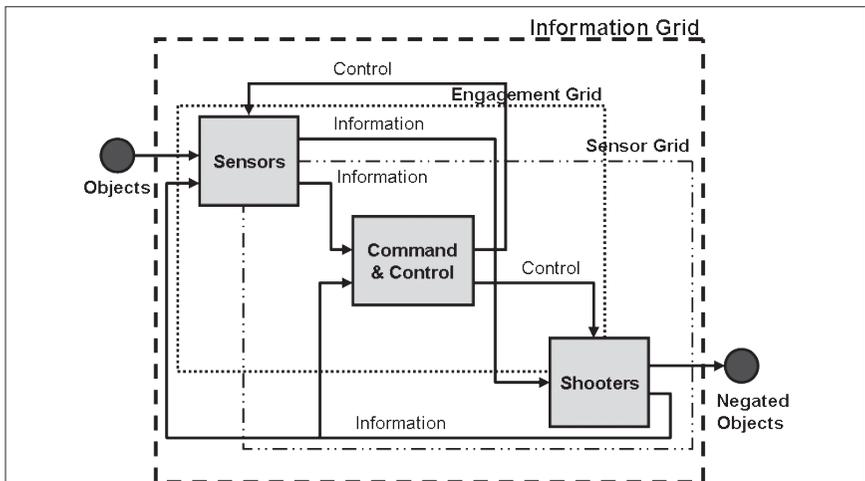


Figure 1. Network-Centric Operations⁷

A graphical depiction of network-centric operations helps describe the environment strategic leaders will face in the future. Figure 1 portrays the environment as the Information Grid, where the network-centric architecture will be established. Sensors, Command and Control, and Shooters are the three key nodes in the network, with information flowing from and to each entity, but control only emanating from the Command node. While the Command and Control node would undoubtedly include the Commander, control could be generated from the Sensor and Shooter nodes if the Commander allows automatic engagements based on set criteria.

In its purest form, network-centric operations is a system. Objects are inputs to the system, processed through the three key nodes in the sensor and engagement grids, with the output being the desired effect placed on that object to reduce or eliminate its influence on the network.

As with any new theory or concept, there are advocates and opponents. Change always generates opposing views and NCW's evolving definition and strong reliance on emerging technology make it a prime target for spirited debate. One thing for certain is that NCW has already started. DoD spending on NCW related technology in 2006 is programmed for \$69.7 billion, with up \$702 billion in total spending through 2016.⁸

The Office of Force Transformation's NCW description provides several advantages to this emerging capability. Geographically dispersed friendly forces linked by the network can avoid the enemy's effort to mass effects on friendly capabilities. Entities on the network can share battle space awareness and terms of reference in analyzing, discussing, or deciding on courses of action. The network also provides secure links between key nodes, aides to increase the speed of decisions, and achieves massed effects on an enemy without massing friendly forces. Jake Thackray's analysis of NCW provides second order advantages to this emerging capability. He explains that greater battle space awareness enables collaboration between disparate entities and enhances their ability to "self-synchronize" their activity with others.⁹ General Wallace's analysis on NCW concludes that shared battle space awareness also stimulates initiative in commanders who would otherwise hesitate due to a lack of clear information, and that the ease network access provides commanders greater freedom to circulate on the battlefield to visit other commanders and Soldiers.¹⁰

General Wallace's article on this subject is titled "Network-Enabled Battle Command" versus the theory's Network-Centric description. This is an important distinction since the focus on technology, or *hardware*, is one of NCW's greatest criticisms.¹¹ Its mere status as a theory or emerging concept, unproven on the battlefield, has created a large group of naysayers highlighting potential disadvantages. Milan Vego argued that the application of advanced

information technologies will not provide the panacea to all the problems associated with modern warfare. Vego concluded that unless we identify and resolve NCW's weaknesses and potential vulnerabilities, it will not provide the decisive capability its advocates are advertising.¹² Wallace's article describes several disadvantages to creating a central focus on technology and not on the commander or people who are responsible for the mission. The gizmos in network-centric operations may shift the responsibility for making decisions from the commander to the hardware, overload entities on the network with data, make it difficult to distinguish between important and irrelevant information, and allow commanders to micro-manage subordinate leaders given their common operational picture.¹³ Paul Harig reinforces this argument in his analysis of the human dimension to leadership and its clash with technology. Harig cautions that automated decision making systems may eclipse intuition and provide the strategic leader with so much information capability, that they become addicted to the system and risk averse to acting without them.¹⁴

Whether an advocate or opponent to NCW capabilities, strategic leaders should take prudent measures to prepare for its influence on their ability to guide individuals and organizations to success. Prudent measures involve understanding the theory behind the capability, its advantages and disadvantages, and how the capability affects strategic leader skills. The transition from organizational to strategic levels of leadership is now more complex, requiring another transition from platform-centric to network-centric skills.

Strategic Leader Skills

The U.S. Army Doctrinal Leadership Framework Model identifies the necessary skills and actions needed at the direct, organizational, and strategic leader levels.¹⁵ The model includes interpersonal, conceptual, technical, and tactical skills that a leader must master to be effective. The competencies change as a leader transitions between levels. Throughout the various skills and levels, there is one constant competency leaders must possess – the interpersonal skill of communication. The average person spends 70% of the day communicating.¹⁶ This skill influences everything a leader does regardless of their particular leadership style.

Autocratic leaders must eventually transmit decisions to the organization. Participatory leaders must have two-way communication systems to gain input from others in the decision making process. Situational leaders must have a communication system to sense the environment before determining an appropriate leadership style. As automated communication and information management systems dominate the network-centric environment, they too will influence the strategic leadership environment. The leader's understanding of his or her essential communicative skills, and the advantages and disadvantages of enabling this competency with advanced technology, will determine if the leader or network has the greater influence on the level of success.

For strategic leaders, communication is an essential skill given the magnitude of their duties and responsibilities. These responsibilities include providing a long term vision, shaping the organizational culture, managing relationships with external organizations and national level authorities, representing the organization, and managing change within the organization. Strategic leaders use communication to articulate their vision for the organization, describe objectives and the end state, and give guidance to focus the collective effort. Communication is essential to shape the organizational culture by ensuring members understand acceptable norms, behavior, and standards. When strategic leaders develop relationships with external entities, their influence is directly attributed to the ability to persuade and negotiation with others to act in the organization's best interests. Persuasion and negotiation inherently involve communication. Another term for being a representative for an organization is to act as a spokesperson, where the dominant skill remains communication. As strategic leaders manage change within the organization, they must monitor information to assess progress, seek and provide feedback to adjust the organization's effort, and motivate members to take the initiative. Whether resolving conflict, allocating resources, making decisions, or performing any of their other roles and responsibilities, effective communication dominates the strategic leader's skill requirements.

The Army developed its doctrinal model based on leadership theories and studies, and vetted these skills by analyzing successful and unsuccessful leaders throughout history. While historical studies are

valuable in providing time tested examples and valid perspectives on leadership, they offer few clues for future leadership requirements. In a rapidly changing environment, strategic leaders cannot wait for others to analyze their tenure and identify the successful skills that they need today.

In July 2004, The Army Research Institute (ARI) completed a fifteen-month study on the competencies needed for future leaders. They identified political-economic, technological-scientific, demographic-cultural, and operational factors as the primary influences on future Army operations and leaders.¹⁷ The study validated the need for interpersonal, tactical, and technical leader skills; and specifically for strategic leaders -- the interpersonal skill of communication. Additionally, the study described numerous challenges created by emerging technology. "The future environment will involve increasing amounts of information transfer as a result of technological advances; therefore, written communication and oral communication will be vital."¹⁸

Network-centric capabilities will be one of the many technical influences on strategic leadership. NCW's capability to enable shared awareness and provide a common understanding of the situation directly relate to one of ARI's requirements for future leader competencies. ARI's analysis shows that future leaders need to ensure a shared understanding throughout their organization. Leaders achieve this by active listening, using verbal and nonverbal means to reinforce communication, employing effective communication techniques, expressing thoughts clearly, recognizing potential miscommunication, and using the appropriate means for conveying messages.¹⁹ The interpersonal skill of communication will remain a dominant competency for future strategic leaders and the application of network-centric operations will influence its effectiveness. While NCW's speed and security are definite enhancements to this skill, an analysis of the communication process reveals several adverse affects.

The Communication Process

Strategic leaders must understand the communication process to recognize the influence that network-centric operations will have on

their interpersonal skills. “By understanding the nature and power of communication, and practicing effective communication techniques, one can better relate to others and translate goals into actions.”²⁰ Executive level leaders should view communication as a system with input, a process, and output. The goal of any communication system is to match how the recipient receives the message (output), with the sender’s intended message (input). Unfortunately, the process has natural barriers against achieving this goal. With an understanding of the communication process, strategic leaders can take measures to mitigate additional barriers when they mediate their message with information technology.

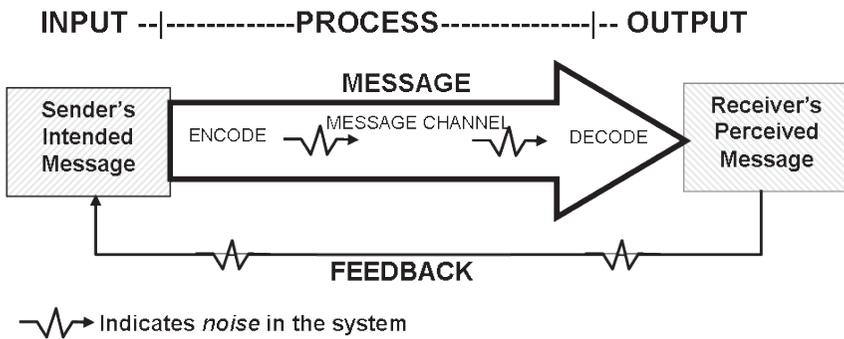


Figure 2. The Communication Process

The seven components to the communication process are the sender (source), message, encoding, the message channel, decoding, the receiver, and feedback.²¹ Figure 2 shows the relationship between these components. The sender encodes the intended message into symbols that add substance and meaning to the sender’s thought, and selects a channel or media to convey the message to the recipient. This channel can be verbal, non-verbal (body-language), written, electronic, or a combination of several media. The receiver decodes the message into symbols that add meaning and substance to the receiver’s thought process. The final component in the communication process is feedback. Feedback occurs when the receiver provides a response to the sender indicating how the original message was received, interpreted, and acted upon.²² Feedback is critical to the communication process since it determines if the process achieved its goal of a similar thought conveyed between the sender and receiver.

There are several barriers to achieving a similar thought between the sender and receiver. First, the sender and receiver are limited by their skills, attitudes, knowledge, experiences, and culture as they respectively encode or decode the message.²³ The receiver may translate the message differently unless there is a common framework for coding transmissions with the sender. Another barrier is the ever present element of noise in the communication process. Noise is generated from several sources including background interference, extraneous words, and transmission failures. Information overload also generates noise with unwanted, unneeded, or disruptive information.²⁴ As Figure 2 portrays, even the choice of the communication channel may generate noise. The means of transmission influence a leader's ability to communicate and may provide a potential source of communication failure.²⁵

Computer assisted and network enabled information management systems have unique characteristics as a communication media. Just as network-centric operations have the advantages of enhancing shared awareness, providing secure channels, increasing the speed of information and decisions, and facilitating greater collaboration, it also has the same disadvantages as other electronically mediated communication.

The network-centric environment will introduce technical noise in communication that is distinct to the electronic channel, and will distract both the sender and receiver from the entire process. The technical nature of computer hardware and their associated software applications require additional time, skill, and effort to process the message. This additional time, skill, and effort is necessary to complete the process, but does not add to the context of the message. Erroneous inputs disrupt the communication process and frustrate both the sender and receiver as they try to retrieve the message from the network. Networked systems also generate noise by creating multiple sources of information and adding to the growing problem of data overload. Technical noise also comes from the need to get to a terminal or carry a device to access the network architecture. Automated communication systems also generate noise through time differentials. The network stores messages until the receiver accesses the system. The time difference between the sender's

transmission and the receiver's decoding can be immediate, a few hours, or even days. Automated information management systems may notify the sender that the message was sent without problems and alert the sender when the destination computer terminal received and opened the transmission. However, this does not mean the intended recipient received the message.

The network-centric environment will introduce decoding noise in the strategic leader's communication process by reducing non-verbal cues that are critical to the communication process. Spatial arrangements between sender, receiver, and within groups strongly affects their behavior, ability to transfer information, and even the emergence of leaders.²⁶ Strategic leaders who mediate their messages through a network create barriers to the communication process by filtering out facial expressions, tone of voice, *body* language and other physical indicators that the receiver needs to accurately translate the message. Network-centric communication may contain text, symbols, graphics, and sound, but these bytes of information are only part of the message. Analysis of oral communication highlights this decoding problem. During face-to-face communication, the total impact of the message is 7% verbal, 38% vocal, and 55% facial.²⁷ The words or verbal component of the message accounts for only 7% of the meaning. The receiver decodes the rest of the meaning through non-verbal signals. Without visual contact in network-centric operations, strategic leaders reduce the effectiveness of their interpersonal communicative skills because the recipient cannot observe the critical non-verbal cues needed to accurately decode the message and must accept the message without clarification.

The network-centric environment will introduce noise in the strategic leader's communication process by reducing feedback that is essential for the leader to ensure the message is understood. Charles McConnell argues that some forms of computer mediated message traffic are not communication. "The one way process is not communication; it is simply the dispensing of information to another person, information that may or may not be received in the form intended."²⁸ Just as network-centric operations reduce the receiver's ability to decode the message, they also inhibit the sender's non-verbal cues from the receiver. By selecting a network-enabled message channel, leaders

adversely affect their ability to communicate by creating barriers to a two-way exchange of information. The study of large businesses has validated this adverse effect. Few employees prefer only electronically mediated communication channels. Between 50% and 75% would rather have a combination of electronic, print, audio-visual, or just face-to-face sources.²⁹

Today's strategic leaders are already communicating through computers and network-enabled information management systems. This is a reality in the complex leadership environment. Network-centric operations will increase the influence of automated information management tools on future leaders. These tools have obvious advantages and disadvantages, but the adverse affect on the essential interpersonal communicative skills is not so obvious. Leaders must realize that the differences between the intended and perceived meaning of the message often results from the complexity of the communication channel.³⁰ An analysis of the communication model shows how technology introduces noise, hinders decoding, and creates barriers to effective feedback. Harig wrote, "the medium might rewrite the message."³¹ A strategic leader's understanding of the communication process will identify NCW's adverse affect on interpersonal communicative skills and be the foundation for developing solutions to the problem.

Solutions

NCW will change the way military forces and their interagency, intergovernmental, and coalition partners operate. Managing the change to network-centric capabilities will be a challenge for leaders whose experiential learning path was in a platform-centric force. What makes this change even more difficult is that the impact of digital communication is not fully understood by both political and military leaders.³² Analyzing the characteristics of NCW and the communication model helps identify the adverse affect on interpersonal communication skills. In order to develop solutions for this problem, it is imperative that leaders at all levels in combat, institutional, and system acquisition fields understand the capabilities, limitations, and organizational employment of technology.³³

Communication specialists and consultants have studied technology's influence on organizations and leaders, offering a variety of solutions to the problem. One study found that only 35% of employees actively look at their organization's intranet on a daily basis.³⁴ This section will identify and analyze two solutions that reduce the barriers associated with automated communication systems. The criteria to analyze and compare each proposal are cost, time, feedback mechanisms, providing non-verbal cues, and noise reduction. Cost is defined as capital expenditures necessary to implement the solution (lower is better). Time is defined as the period required to establish the solution (shorter is better). Establishing a feedback mechanism is the degree that the solution provides a means for the receiver to clarify the message with the sender. Preferably, this mechanism is available with the original message channel. Provisions for non-verbal cues refer to the solution's ability to provide visual and aural contact between the sender and receiver. Preferably, these cues should be available with the original message channel. Noise reduction refers to the solution's simplicity and ability to control information overload (less is better).

Throughout the related literature, communication specialists emphasize that any solution must start by analyzing how information flows within the organization. Two studies have analyzed this flow and recommend specific measures to improve communication. The Department of Behavioral Sciences and Leadership at the U.S. Military Academy stresses redundant communication channels with brief backs for clarity and feedback. Linda Gasser, a management development specialist at Cornell University, recommends that managers develop an internal communication strategy. While each option reduces the adverse affect of computer mediated communication, the evaluative criteria show one solution as the best course of action.

The Military Academy's solution involves additional staff personnel in the communication structure to act as information filters, uses redundant communication channels, and stresses brief backs as a method to provide feedback.³⁵ Staff members serve as *Aides de Commo* and filter extraneous messages to reduce information overload and ensure the receiver gets only useful information.

The sender gains an increased sense of communication success by transmitting messages on two separate channels, providing the receiver with multiple sources for decoding. A brief back is when the receiver tells the sender how he or she decoded the message, provides feedback to the sender, and affords an opportunity for clarification. Brief backs can happen instantaneously, but are normally conducted after a short delay from the sender's transmission.

The advantages to this alternative are a positive feedback mechanism, non-verbal cues, and a moderate effort to reduce noise. Although the feedback mechanism is not immediate, the sender and receiver ensure clarity through this process. The sender also gives non-verbal cues during the brief back and compensates for the non-verbal cue delay by sending a simple message that the receiver can easily decode. Filters are a good method to reduce information overload and other unwanted noise in the communication process. However the leader must give the staff specific guidance on the type of information to filter, and the disposition of the filtered information.

The disadvantages to this alternative are cost and time. Redundant message traffic defeats the purpose of network-centric operations. Network-centric systems should speed the flow of information and not burden the network with multiple transmissions. Redundant communication increases system cost, manpower requirements, and compensation for additional staff members. Additionally, redundant transmissions create noise by requiring the receiver to access several communication sources for the same message. The brief back process adds time because the sender and receiver must establish another communication session to clarify the context of the original message.

Glasser's solution requires leaders to develop a communication plan for the organization, covering all levels and types of information. The strategy determines what to communicate, to whom, when, and through what type of media.³⁶ The leader analyzes information flow in the organization and develops a communication strategy to address four topics. First, the sender must identify the purpose of the communication. The purpose could be informative, notification, personal, directive, or require a decision. Understanding the purpose determines how the sender encodes and transmits the

message. Second, the sender analyzes the intended receiver. The sender decides if the receiver requires or desires the information and modifies the context of the message depending on the receiver's communicative abilities. Superiors, peers, and subordinates expect certain types of communication. Third, the sender selects the media to transmit the message. This could be one-way, interactive, formal, or informal, and depends on the purpose of the communication and the receiver. Finally, the sender assesses the risks and benefits of transmitting the message along the specific channel to the intended receiver. This assessment is a final check to reduce errors in the communication process.

The advantages to this alternative are cost, time, feedback, and non-verbal cues. Gasser's strategy does not increase cost because it uses the existing media. The leader also addresses time requirements during the strategy analysis process to ensure the receiver gets the message when the receiver needs it. This solution provides a feedback mechanism and non-verbal cues when they are necessary. If the leader wants to distribute information or direct a specific action, he could use a computer mediated channel because feedback and non-verbal cues are not essential in these messages. However, if the manager must negotiate or requires input to his organization's planning process, he should select video teleconferencing, a meeting, or other collaborative media to gain feedback and observe non-verbal cues.

The disadvantage to this solution is a poor effort in reducing noise. The solution continues to complicate the communication system by using all available message channels. The receiver must access several sources depending on how the sender decides to transmit the message. This solution does not provide measures to prevent information overload. The leader only decides if the information is required or desired.

In comparing the Military Academy and Gasser's solutions in relation to the evaluative criteria, Gasser's solution is less costly and requires less time for implementation. The leader selects and transmits a message along a single channel only once. The Military Academy's redundant communication system increases expenses with twice the message traffic and more manpower requirements. Redundant communication and the brief back sessions add time

to the communication process in the Military Academy's solution, and counter the overall advantage to NCW's goal of speedy decisions. However, the brief back process does have the advantage of providing the essential element of feedback. Gasser's method provides a feedback mechanism only when the manager decides it is appropriate. Both solutions provide the same non-verbal interaction between the sender and receiver. The West Point solution provides this interaction during the brief back process. However, this event could happen long after the original message is sent. Gasser's solution provides non-verbal cues only when the manager selects an interactive channel. The Military Academy's filters in the redundant communication process have a noise reduction advantage over Gasser's plan. Gasser does not specify a step in her strategy to reduce information overload.

Both methods would improve the manager's interpersonal communicative skills and reduce computer mediated barriers to effective communication. Each solution completes the communication process with a feedback loop, provides the critical non-verbal cues for message decoding, and reduces the inherent noise in the communication system. With the weighted criteria applied to the alternatives, Gasser's internal communication strategy becomes the best solution to the problem. This strategy is less costly, faster, and mitigates the adverse impact of network-centric operations on a strategic leader's interpersonal communicative skills.

Recommendation

Strategic leaders should develop a communication strategy to mitigate the adverse effects of computer and network-enabled information management systems on their interpersonal communication skills. The foundation for this strategy would be Gasser's four-step communication decision making process. Leaders should also take additional steps to compensate for the weaknesses in Gasser's strategy. These additional steps include providing feedback mechanisms, reducing noise, and using participatory leadership to develop and implement this strategy.

Most organizational cultures place a high premium on *face time*.³⁷ Strategic leaders shape this culture and should make a concerted

effort to mitigate NCW's barriers to feedback. Network-centric operations also affect feedback from the leader to subordinates when the subordinate initiates the communication process. A method to improve feedback is to schedule follow-up communication with the interested parties. This follow-up may be a short message over the same channel, or preferably another channel such as a telephone or video conference to give the receiver different cues. Leaders can use the brief back process to facilitate feedback, but its application in NCW may make this additional step applicable to certain types of information and not all communication encounters. Leaders must also encourage subordinates in their organization to ask questions and seek clarification when information is unclear. Finally, strategic leaders should increase personal contact with the people in their communication network. This would reinforce the fact that a human being exists on the other side of the network-centric display terminal and provide an opportunity for person-to-person contact.

The strategic leader's communication strategy must reduce noise in the network-enabled process. To accomplish this, the strategy should not only describe how to use the information management system, it should instill the concept of information responsibility. Peter Drucker discussed the concept of information responsibility in his article, *The Coming of the New Organization*. Drucker asks a simple question to develop information responsibility – "Who in this organization depends on me for what information, and on whom, in turn, do I depend?"³⁸ The written strategy should focus management on the information component and not the system. What information is important, who needs it, when do they need it, and what we do with all the other information are several key questions to ask in this analysis. Information responsibility will reduce noise by eliminating uncertainty concerning how the organization processes information, takes steps to prevent information overload, and highlights time-sensitive and important information for immediate action. Finally, the policy should designate the appropriate channel to transmit specific types of information. Network-centric communication systems may not be the right channel for all communication needs.

The final recommendation to improve upon Gasser's four-step decision making process is to include subordinates and external

groups in the strategy formulation process. Including people who represent the entities in network-centric operations will increase their commitment toward using the system and gain consensus in applying the strategy. As executives use a participatory leadership styles to build consensus on the communication strategy, they will also gain keen insights and perspectives from the people who work with network-enabled systems every day. This perspective will help shape the leader's intent for a communication strategy.

Conclusion

If there were a strategic communication corollary to the U.S. Military's intelligence preparation of the battle space it would be: correctly analyze the combined impacts of audience, impact, message and means.

—Defense Science Board Task Force
on Strategic Communication

The application of advanced information technology in the theory and concepts behind NCW constitute a significant transformational capability. This change will affect the already complicated environment for strategic leaders who have developed their skills and demonstrated their abilities in platform-centric organizations. As leaders transition from direct and organizational levels to strategic positions, they must study the future environment and prepare for its challenges.

NCW theory and concepts offer both promise and pitfalls associated with its application. While some positive and negative characteristics are easily identifiable, others require more analysis. The automated information management systems that provide the dominant channel in a network-centric environment will have adverse affects on a strategic leader's interpersonal communicative skills. These channels introduce disruptive noise in the communication process, lack the non-verbal cues essential for decoding messages, and create barriers to the feedback needed to complete the communication process.

Strategic leaders can mitigate these adverse effects with a detailed communication strategy. The strategy should take active measures to support feedback mechanisms, instill a culture of information responsibility to reduce noise in the communication process, and involve subordinates and other key stakeholders in the strategy development process to achieve consensus in its implementation.

Technology is a useful tool in a leader's kit bag. It provides a means to perform essential communicative skills. A communication strategy will address the ways to achieve effective interpersonal communication objectives while balancing the risks associated with its application. "In the end, it could be argued, all great commanders are the same. They adapt the technology of their times in a highly personal, reflective space where machines can extend, but never supplant, the human dimension of their leadership."³⁹ The effective strategic leaders in a network-centric environment will understand technology's influence on their skills and master this transformational capability to make rapid and correct decisions.

