Network Centric Warfare, Command, and the Nature of War

A Monograph

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Abstract

NETWORK CENTRIC WARFARE, COMMAND, AND THE NATURE OF WAR
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Military theorists such as David Alberts contend that information technologies will allow for wider and more rapid sharing of information. In order to take advantage of the emerging possibilities presented by information technologies the theorists recommend changes to the structure of information age military organizations and changes to the methods for command and control of military forces. Some of their ideas have implications for the traditional function of command. This monograph asks how contemporary military theorists account for the essence of command in information age theories of warfare. Case studies of Frederick the Great, Napoleon Bonaparte, and Dwight D. Eisenhower demonstrate that the essence of command is the dynamic relationship among nine imperatives. These imperatives include context, action, nerve, presentation, design, intellect, expertise, coherence, and the individual. The monograph contends that the emerging information age theories of warfare are flawed because they are based on a definition of command that does not account for these imperatives. The monograph serves as a warning to those who might seek to optimize an army for network centric warfare.

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> The working hypothesis of network-centric warfare as an emerging theory of war, simply stated, is that the behavior of forces, i.e. their choices of organizational relationships and processes, when in the networked condition, will outperform forces that are not.
>
> - The Office of Force Transformation

Introduction

Communicating with a three dimensional hologram of a remote soldier is one future that could be made possible by emerging information technologies. This future is a possibility arising from the current trend of developments in information and communication technologies. These technologies are developing at such a rate that it is difficult for organizations to adapt quickly enough to exploit the advantages of emerging new potentials. The imagined possibilities have a 'beyond this world' quality about them. They seem to suggest that the visions of science fiction are now within reach. Such is the nature of the changes and emerging possibilities that it is difficult not to believe that the world is in the middle of a major revolution. In fact, some contemporary military theorists argue that developments in information technologies are the catalyst for a new military revolution. These theorists directly challenge many long-standing beliefs about the nature of war, and none more so than the function of the commander.

Military theorists such as David Alberts contend that information technologies will allow for wider and more rapid sharing of information. In order to take advantage of the emerging possibilities presented by information technologies they recommend changes to the structure of information age military organizations and changes to the methods for command and control of military forces. Alberts and others contend that information age military forces should be less hierarchical and less dependent on centralized planning and control. Some theorists go as far as to forecast that there will no longer be a requirement for a single commander. These ideas have clear implications for the traditional function of command.

Given the implications of the theorists' revolutionary claims, it is prudent to subject them to rigorous analysis. This monograph is intended to contribute to that scrutiny by asking how contemporary military theorists account for the essence of command in information age theories

of war. The purpose of this monograph is to answer this question so that those responsible for incorporating information age theories of warfare into operational concepts do so in such a way that these concepts remain congruent with the essence of command. The monograph argues that the essence of command is the dynamic relationship among nine imperatives. These imperatives are context, action, nerve, presentation, design, intellect, expertise, coherence, and the individual.[1] The monograph contends that the emerging information age theories of warfare are flawed because they are based on a definition of command that does not account for these imperatives.

It is possible to divide contemporary military theorists into two broad schools. The first school is the fourth generation warfare school. The second is the revolution in military affairs school. While many might argue that there is significant overlap between these two schools, the purpose in distinguishing between them is to limit the scope of this monograph to an analysis of information age theories of war. All further references to contemporary theorists are references to revolution in military affairs theorists. In fact, further references to information age theories will be references to the theory of network centric warfare (NCW).

This monograph consists of six sections. Section 1 of the monograph reviews some of the NCW literature in order to illustrate how the theorists rely on a very narrow definition of command. Section 1 also explores other authors' definitions of command in order to demonstrate that command has an essence that extends beyond simple definitions. Sections 2 through 4 compare commanders before and after several generally accepted revolutions in military affairs in order to understand the relationship between change in warfare and change in command, and consequently infer the essence of command. An analysis of Frederick the Great (pre democratization of war), Napoleon (pre Industrial Revolution, pre managerial revolution, and pre mechanization of war), and Eisenhower (pre information revolution) reveals how the means and

[1] The term design refers to a concept for action, an intended outcome, as well as the process for deriving both. The monograph uses the word design instead of other similar words such as strategy, plan, or concept because it captures an array of factors and elements that tend not to be associated with these terms. Design is used in its broadest sense and should not be understood in the very specific usage in emerging US Army doctrine.

character of command changed in tandem with intervening revolutions in military affairs, and reveals those features of command that appear to transcend change. These features form the essence of command. Section 5 makes the case for an essence of command, and section 6 analyzes the common tenets and claims of information age theories of warfare in this context. This treatment serves to highlight the flaws in the theories, and consequently, the dangers inherent in incorporating the theories into operational concepts. The analysis reveals that while NCW has obvious utility to contemporary military forces, it would be wise to temper any ambition to optimize a force for NCW.

Literature Review

The US Department of Defense publication *Implementation of Network Centric Warfare* captures the essence of the literature regarding NCW. The document regards NCW as an emerging theory of war that constitutes the US military's response to the notion of an information age.[2] The publication claims that the impact of NCW is as significant as the military revolution of the Napoleonic period.[3] The immediate origin of NCW lay in the paper titled *The Emerging US System of Systems* written by former Vice Chairman of the US Joint Chiefs of Staff, Admiral William Owens, in 1996. Owens describes how the recent evolution of new technologies enabled enhanced situational awareness, rapid target assessment, and distributed weapon assignment.[4] The term NCW was first seen publicly in a 1998 *US Naval Institute Proceedings* article by Vice Admiral Arthur Cebrowski (former Director of the Office of Force Transformation 2001-2005) and John Garstka (an assistant director at the Office of Force Transformation and leading thinker in NCW).[5] Within these publications, the authors contend that actors within the contemporary world derive power from information sharing, information access, and speed.[6]

The authors' basic premise is that a networked force improves information sharing; information sharing enhances the quality of information and shared situational awareness; shared situational awareness enables collaboration, self-synchronization, and sustainable speed of command; and these in turn dramatically increase mission effectiveness.[7] The authors contend that mission effectiveness is improved by a reduction in the "fog of war," which leads to a qualitative improvement in decisions. Even those theorists who accept the enduring presence of the "fog of war" argue that a networked force can achieve relative information superiority, meaning a clearer, more accurate, and more detailed understanding of the situation than an

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[2] Arthur K. Cebrowski, *Implementation of Network Centric Warfare* (Washington D.C.: United States Government Printing Office, 2005), 3.
[3] Ibid., 5.
[4] William A. Owens, "The Emerging US System-of-Systems," *Strategic Forum*, 63 (February 1996).
[5] Cebrowski, *Implementation of Network Centric Warfare*, 5-6.
[6] Ibid.
[7] Ibid., 7.

enemy. According to the theorists, this leads to "decision superiority."[8] Decision superiority, they argue, reduces risk, as does the greater dispersal of the forces made possible by the ability to "reach back" and apply precision weapons.[9]

In their publication, *Power to the Edge*, leading NCW thinkers, David Alberts and Richard Hayes, take the concept of NCW a step further. The premise of their book is that new and more powerful integrated information systems will allow military organizations to push important decisions from high echelons of command to those at the edge of the organization.[10] They contend that military forces can "self-synchronize" in this way.[11] Alberts and Hayes believe that in order for an organization to optimize for NCW it must change its organization culture, structure, training, and equipment.[12] Part of such a change would be a change from a "concept of command that is tied to an individual commander to a concept of command that is widely distributed."[13] Implicit in this recommendation is that command is a function existing primarily for the purpose of decision-making and control.

NCW theorists define command in very narrow terms. Alberts and Hayes regard command and control as the "common military term for management of personnel and resources."[14] They suggest that command and control is a "relatively recent term that for millennia was referred to as simply *command*."[15] In their book, *Network-Centric Warfare: Developing and Leveraging Information Superiority*, Alberts, Garstka, and NCW theorist Frederick Stein, combine the terms command and control and describe the combination as "inherently an iterative decisionmaking process, as feedback from the battlespace is incorporated

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[8] David S. Alberts et al., *Understanding Information Age Warfare* (Washington D.C.: CCRP Publication Series, 2001), 37-39, 76.
[9] David S. Alberts and Richard E. Hayes, *Power to the Edge: Command and Control in the Information Age* (Washington, D.C.: CCRP Publication series, 2003), 137.
[10] Ibid., 5-6.
[11] Ibid.
[12] Ibid., 180
[13] Ibid., 18
[14] Ibid., 1.
[15] Ibid., 3.

into plans and corrective actions."[16] In a more recent book, Alberts and Garstka, along with political scientist and methodologist, Richard Hayes, and RAND scientist, David Signori, suggest that there is a traditional view of command based on John Boyd's idea of the decision cycle.[17] It is the idea that decisions are made by first observing something physical, followed by orientation by placing the observation in context with other information, followed by deciding what action to take, then acting.[18] In the same book, Alberts et al. proffer an information age view of command and control. They regard it as a process made up of several interacting parts, including battlespace monitoring, awareness, understanding, "sensemaking," command intent, battlespace management, and synchronization.[19]

In *Power to the Edge*, Alberts and Hayes argue that some authors have attempted to make a distinction between command and control.[20] One idea is that command is art, whereas control is science. Another idea is that command relates to the commander, whereas control relates to the staff. Their contention is that this discussion focuses erroneously on the idea of a single commander when command and control in modern warfare is actually a distributed responsibility. According to Alberts and Hayes, the focus of the discussion is a result of the tendency to defend traditional notions of command based on hero worship and a misunderstanding of the enduring nature of command and control.[21] They contend, "The enduring principles of command and control are not about who accomplishes what tasks, nor how to accomplish them, but the *nature* of these tasks themselves."[22] Therefore, "Enabling a collection of individuals to accomplish a mission that requires their collective skills and energies requires command and control. It does not require a single commander nor does it require one or more individuals acting as

[16] David S. Alberts et al., *Network Centric Warfare: Developing and Leveraging Information Superiority* (Washington D.C.: CCRP Publication Series, 1999), 69.
[17] Alberts, *Understanding Information Age Warfare*, 132.
[18] Ibid., 132.
[19] Ibid., 136.
[20] Alberts, *Power to the Edge*, 5.
[21] Ibid., 6.
[22] Ibid., 17.

controllers."[23] The theorists contend that the Western military approach to control is an industrial age approach, which restricts flexibility.[24] They argue that this type of control is hierarchical, and aligns information flows with authority.[25] This characterization of industrial age command stands in stark contrast to the theorists' vision of a flexible information age organization that can self-synchronize through shared understanding.[26]

There would appear to be a pattern to the usage of the terms command and control throughout the NCW literature. Decision-making, decision cycles, control, understanding, awareness, monitoring, and management are common themes. This pattern suggests that the theorists believe that information is central to command, and implies that the foremost rationale of command is decision-making. Moreover, the frequent combination of the terms command and control tends to overemphasize the significance of control (or lack thereof) in command.

Despite these tendencies, the theorists concede that there is more to command than this. In *Network-Centric Warfare: Developing and Leveraging Information Superiority*, the authors accept that "Warfare has always been a challenging domain characterized by the importance of the endeavor, risk to life, sheer magnitude of the effort, and management of uncertainty," and acknowledge that "approaches to command and control have been honed over time to meet these challenges."[27] They also concede that, "Folded into this term is everything from inspiring and motivating the individuals in the organization, to setting and conveying a common sense of purpose, to assigning responsibilities, to assessing how well the organization is performing."[28] In *Power to the Edge*, there is acknowledgement that command predates and has evolved separately from politics and management because of war's qualitative difference.[29] Nevertheless, Alberts

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[23] Ibid., 15.
[24] Ibid., 18-26. Alberts and Hayes discuss a spectrum of industrial age command and control approaches used by Western military forces.
[25] Alberts, *Understanding Information Age Warfare*, 163.
[26] Alberts, *Power to the Edge*, 10, 208.
[27] Alberts, *Network Centric Warfare*, 69.
[28] Ibid.
[29] Alberts, *Power to the Edge*, 13.

and Hayes describe this qualitative difference in terms of the importance of time and the high cost of error, revealing a shallow understanding of the nature of war.[30]

Consequently, the theorists allude to a new meaning of command in the information age. They contend that:

> Command in the Information Age involves creating the conditions for success, including the selection of a vision and associated goals, the development of objectives, the setting of priorities, the allocation of resources, and the establishment of constraints. Taken together, these (1) define the problem to be addressed or the mission to be accomplished and constitute *command intent* and (2) scope the solution. Implicit in this formulation is the recognition of a need to modify or change intent and/or the solution approach as the need arises. In a coalition environment, the maintenance of the coalition (shared intent) is a very important element of command. To ascertain the quality of command in a given situation, four attributes need to be addressed: (1) the quality of the formulation of intent, (2) the degree to which the intent is understood (correct and shared), (3) the quality of the solution approach, and (4) the responsiveness related to making appropriate changes.[31]

This definition conforms to the theorists' pattern of narrowly defining command as a function of decision-making and controlling. The glaring omission is the absence of any reference to authority or leadership. However, this is not surprising given the US military's definitions of command. In many ways, the theorists are simply following the recent trend among military professionals and other authors to define command quite narrowly, and to combine it with the word control.

Only one of the primary NCW texts attempts to provide a comprehensive definition of command. The definition used is the US joint doctrinal definition, which includes "responsibility for effectively using available resources, planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions. It also includes the responsibility for health, welfare, morale, and discipline of assigned personnel."[32] The relationship between command and the health, welfare, morale, and discipline of assigned personnel is expressed as though it were added as an afterthought. Joint Publication 1-02,

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[30] Ibid.
[31] Ibid., 205.
[32] Ibid., 14.

Department of Defense Dictionary of Military and Associated Terms also links command and control and defines the combination as:

> The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.[33]

Given the United States military's own emphasis on planning, directing, coordinating, controlling, and managing, the theorists' usage of the term "command" is hardly surprising. Nevertheless, there is one important difference between the military definitions and those used by the theorists. The military definitions define command in terms of authority, which suggests that command is more than just decision-making and the exercise of control. Authority implies prescription or action, and implies that commanders are accountable to somebody.

In many respects, command and authority are almost synonymous. Armies are social organizations. Leadership consultant and senior lecturer, Ronald Heifetz, observes that, "social living depends on authority."[34] He argues that systems of authority serve vital social functions not least of which is the coordination of individual behavior as part of a social framework. In most primate groups, dominance and deference relationships serve this need. However, in modern human societies, deference to authority figures coordinates individual behavior. Heifetz defines authority as conferred power to perform a service. According to Heifetz, authority is given and taken away as part of an exchange. If the authority figure does not provide the service promised in the terms of the exchange he risks losing his authority. Heifetz observes that when stress is severe (as in war) humans seem especially willing to grant extraordinary power and give away

[33] Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington D.C.: U.S. Government Printing Office, 26 December 2006), 103.
[34] Ronald A. Heifetz, *Leadership Without Easy Answers* (Cambridge, MA: Belknap Press of Harvard University Press, 1994), 49.

freedoms and rally to a person in whom they have conferred power and trust to restore a degree of certainty and safety. People tend to look to authority figures for direction, protection, and order.[35]

Heifetz contends that there are two types of authority: informal and formal. Superior authorities confer formal authority. It is essentially an underwritten source of power. Individuals confer informal authority. It is a much greater source of power, although far less permanent or secure than formal authority. A leader gains informal authority by gaining credibility, respect, popularity, reputation, admiration, and trust.[36] Heifetz argues that these things tend to derive from a demonstrated capacity to take other people's problems off their shoulders and give them back solutions.[37] Heifetz argues that, "With formal authority come the various powers of the office, and with informal authority comes the power to influence attitude and behavior beyond compliance."[38] Informal authority is therefore the power to "extend one's reach beyond the limits of the job description" and is therefore far more powerful than formal authority, and an important factor of command.[39] Therefore, command is almost certainly more than just a function centered on decision-making and control. It implies exercising both formal and informal authority.

Informal authority is not easy to establish, nor maintain. Respect, trust, admiration, popularity, and credibility require constant demonstrations of the authority figure's ability to provide the service expected of him. Informal authority is a function of constantly demonstrated competence, or at least that the individuals who conferred the authority perceive the authority figure to be competent. Consequently, establishing and maintaining informal authority requires a large investment in time and effort by the authority figure. Nevertheless, the investment returns greater power in the sense of the potential to influence and persuade others to act.[40] Therefore, command incorporates those activities that contribute to the establishment and maintenance of

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[35] Ibid., 49-50, 57, 65, 69.
[36] Ibid., 101.
[37] Ronald A. Heifetz, *Leadership on the Line* (Boston, MA: Harvard Business School Press, 2002), 6.
[38] Heifetz, *Leadership Without Easy Answers*, 101.
[39] Ibid., 102.
[40] Ibid., 83, 101-103, 114.

informal authority. The theorists' failure to address the maintenance and exercise of authority in any meaningful way suggests their radically narrow view of command.

Historians Martin van Creveld and John Keegan, and military theorist Carl von Clausewitz, describe command in very different terms to those used by the NCW theorists. Their descriptions are far more sophisticated and suggest that command has an essence that goes well beyond simple definitions. In his book, *Command in War*, van Creveld analyzes command systems, regarding them as functions of information, judgment, and decision-making.[41] His focus is therefore similar to that of the NCW theorists. Van Creveld describes the evolution of command systems and the way they operated from ancient times to the near present. He considers the evolution of command systems in the context of the various enduring problems of command faced by armies throughout history. In doing so, he illuminates the nature of command systems and identifies the main factors involved. According to van Creveld, the enduring problems of command faced by armies throughout history include:

> Gathering of information on the state of one's own forces – as well as the enemy and on such external factors as weather and terrain. The information having been gathered, means must be found to store, retrieve, filter, classify, distribute, and display it. Based on the information processed an estimate of the situation must be formed. Objectives must be laid down and alternative methods for attaining them worked out. A decision must be made. Orders must be drafted then transmitted, their arrival and proper understanding by the recipients verified. Execution must be monitored by means of feedback system, at which time the process repeats itself.[42]

A command system is therefore, a means of dealing with these problems. Van Creveld finds that while technological advances give commanders new tactical, operational, and even strategic possibilities, they also present new limitations.[43]

According to van Creveld, despite changes in warfare, technology, and command systems, armies have always expended a great deal of energy in the pursuit of certainty about themselves, the enemy, and the environment as though this certainty is sufficient to guarantee

[41] Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 7-8.
[42] Ibid., 7.
[43] Ibid., 261-275.

successful conduct of command in war.[44] His conclusion is that "no single communications or data processing system technology, no single system of organization, no single procedure or method, is in itself sufficient to guarantee the successful or even adequate conduct of command in war."[45] Van Creveld contends that commanders are usually effective when they work out how to overcome the limitations of existing technologies rather than employing technologies that are more advanced.[46] Van Creveld's argument is important for it takes a very narrow perspective of command similar to the theorists' but comes up with a completely different conclusion.

Clausewitz' *On War* discusses command primarily in Chapter Three of Book One titled "On Military Genius." He contends "Any complex activity, if it is to be carried out with any degree of virtuosity calls for appropriate gifts of intellect and temperament."[47] Clausewitz refers to genius as "a very highly developed mental aptitude for a particular occupation."[48] "Genius consists in a harmonious combination of elements, in which one or the other ability may predominate, but none may be in conflict with the rest."[49] Clausewitz outlines several behaviors and traits that comprise military genius. The first is courage, which he argues exists in two forms – courage in the face of danger and the courage to accept responsibility primarily for the effects of a commander's actions on his men. The second trait of military genius is a sensitive and discriminating judgment, which includes a "skilled intelligence to scent out the truth" and pertains to the uncertainty inherent in war. The third is the quality that allows the mind to emerge unscathed from the demands placed on it by uncertainty, friction, and danger. Clausewitz refers to this as the combination of an inner light that even in the darkest hour leads to truth (*coup d'oeil*) and the courage to follow this light (determination). The fourth is the presence of mind of to deal with the unexpected. The fifth is the will to overcome the resistance from within his organization

[44] Ibid., 264.
[45] Ibid., 261.
[46] Ibid., 275.
[47] Carl von Clausewitz, *On War*, trans. and ed. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 100.
[48] Ibid.
[49] Ibid.

as the demands of war, particularly violence and death, begins to affect his soldiers. The sixth is the energy to remain staunch and endure prolonged resistance. Last is self-control. Clausewitz argues that this combination derives from a special type of mind, not necessarily a brilliant one.[50]

Keegan's book, *The Mask of Command*, is about generalship; specifically the supreme command exercised by Alexander the Great, the Duke of Wellington, General Ulysses S. Grant, and Adolf Hitler. Keegan views command as the art of persuasion and somehow related to acting. His mask of command is a synonym for hiding the true nature of the commander and presenting a character or persona that is necessary for greatest effect. Keegan, like van Creveld, acknowledges the co-evolution of the role of the commander and technology (as well other important social, political, and economic factors). He contends that command has evolved in four stages – heroic, anti-heroic, un-heroic, and false heroic.[51] To prove his point he asks the question: "When conducting a battle, do you lead your men in front?" then demonstrates through case studies that commanders of the heroic era did so always, those of the anti-heroic era did so sometimes, those of the un-heroic era did so seldom, and those of the false heroic period never do so.[52] Keegan concludes that command is very much a function of a commander knowing when to appear in front of his troops, where to position himself, and how to appear; and that this decision is as much dependent on cultural and social factors as it is about the purely practical considerations of a particular battle or campaign.[53] The implication of Keegan's conclusion is that command is an ambiguous term and related in large measure to theater. Keegan's conclusion, along with those of van Creveld and Clausewitz, suggest that there is something more to command than the narrow take of the NCW theorists. The idea that there is more to command than the narrow take of the NCW theorists is the premise for this monograph, and is what makes it unique among critiques of NCW theory.

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[50] Ibid., 101-106.
[51] John Keegan, *Mask of Command* (New York: Viking, 1987), 11.
[52] Ibid., 314.
[53] Ibid., 11, 314-315.

Two of the primary critics of NCW are Alexander Kott, a program manager in the Defense Advanced Research Projects Agency, and Senior fellow at the Center for Strategic and Budgetary Assessments, Barry Watts. Kott provides a thorough criticism of NCW in his book, *Battle of Cognition: the Future Information Rich Warfare and the Mind of the Commander*. Kott uses laboratory simulation and experimentation to demonstrate the flaws in NCW. Kott finds that the limiting factor in information processing is the human mind. Because of psychological biases, commanders and staffs exposed to a high load of high quality information tend to interpret a situation incorrectly, resulting in poor situational comprehension.[54] Watts' 1996 book, *Clausewitzian Friction and Future War,* directly challenges the RMA theorists' claims that, advances in sensor technologies and information systems will go a long way toward lifting the fog of war. Watts contends that Clausewitz' concept of friction is one of the most important features of war.[55] He argues that friction will continue to dominate war no matter how new technologies might change the means and character of warfare.[56] To make his case he draws on recent military history as well as philosophy and physiology.

John Keegan's *Intelligence in War* is also useful in putting the relationship between information, decision-making, and success in battle into perspective, and stands as an indirect challenge to the claims of the NCW theorists. Keegan reveals that war is "ultimately about doing, not thinking" and that an information advantage in war is not necessarily decisive.[57] He disproves the widely held and highly deterministic assumptions that the more perfect a commander's knowledge of the situation the better his decisions will be. He concedes that "to make war without the guidance intelligence can give is to strike in the dark, to blunder about, launching

[54] Alexander Kott, *Battle of Cognition: the Future Information Rich Warfare and the Mind of the Commander* (Westport, CT: Praeger Security International, 2008), 212-213.
[55] Barry D. Watts, *Clausewitzian Friction and Future War* (Washington D.C.: Institute for National Strategic Studies, 1996), 131.
[56] Ibid.
[57] John Keegan, *Intelligence in War* (New York: Vintage Books, 2004), 321.

blows that do not connect with the target altogether."[58] Nevertheless, Keegan reveals that while information in war is important, "intelligence factors will rarely determine the outcome."[59] While intelligence, and by inference information, may be usually necessary, it is not a sufficient condition of victory.[60] Other immutable characteristics of war such as human will and chance tend to have a much greater influence over events and outcomes. Keegan's argument is the antithesis of the argument proffered by the NCW theorists.

Based on a narrow interpretation of command, the NCW theorists' claim that a networked force improves information sharing; information sharing enhances the quality of information and shared situational awareness; shared situational awareness enables collaboration, self-synchronization, and sustainable speed of command; and these in turn dramatically increase mission effectiveness. Critics of NCW such as Kott and Watts make strong cases against the theory, yet neither do so through the lens of the transcendent nature of command. Heifetz, Clausewitz, van Creveld, and Keegan all suggest that there is more to command than the simple definitions used by the theorists, and van Creveld and Keegan contend that a superior information position rarely provides a decisive advantage in war, suggesting that the theorists' narrow interpretation of command might constitute a major flaw in NCW theory. By analyzing NCW theory through the lens of command, this monograph should provide a fresh approach to the debate on the influence of new information based technologies and the conduct of war.

In the next three sections the monograph looks at the nature of the commands of Frederick the Great, Napoleon Bonaparte, and Dwight D. Eisenhower in order to reveal how the means and character of command changed in tandem with intervening revolutions in military affairs, and to derive those features of command that appear to transcend change. These features form the essence of command. The analysis of each of the commanders begins with an exploration of the character and limitations of warfare in their respective times in order to filter

[58] Ibid., 334.
[59] Ibid.
[60] Ibid

out superficial conclusions, but more importantly, to help identify subtle similarities and differences that would not have been otherwise apparent. It is with this view in mind that the monograph begins with the analysis of Frederick the Great.

Frederick the Great

Many regard Frederick the Great as being second only to Napoleon in his possession of military genius. Frederick succeeded his father as King in Prussia in 1740. That same year, at the age of 28, Frederick led an army of nearly 30,000 troops into Silesia and won a series of stunning victories resulting in the attainment of all his objectives. His only prior experience of war was his time studying under Prince Eugene in the campaign of 1735-36. At the time of his accession, Prussia was a scattering of small territories. During his reign, Frederick united the disparate and vulnerable territories, modernized the Prussian state, and created the fifth largest power in Europe. Frederick achieved all this in large part because of his aptitude as a military commander. An analysis of how Frederick prosecuted war should provide an insight into the nature of his genius. This analysis will provide a marker by which to orient the analyses of Napoleon and Eisenhower in pursuit of the essence of command.

Limited War and Command in Frederick's Time

During the early modern period, dynastic European governments harnessed and consolidated the resources of the state in the hands of the monarch. This consolidation of power gave the head of state tremendous power over all aspects of life within his state boundaries and came at the expense of the feudal aristocracy. This authority was a product of the monarch's monopoly over the state's military power.[61] Given his control of the military instrument, the monarch was responsible for maintaining it. Therefore, armies of the time were relatively small, highly professionalized, and deliberately isolated from society in war and peace. As a rule, the rationale for wars was reasons of state. Armies were prohibitively expensive to maintain and campaigns were extraordinarily expensive to wage. Accordingly, the sovereign's authority over

[61] Henry Guerlac, "Vauban: The Impact of Science on War," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age,* eds. Peter Paret, Gordon A. Craig, Felix Gilbert (Princeton, NJ: Princeton University Press, 1986), 66-68. Also John A. Lynn, "States in Conflict," in *The Cambridge History of Warfare,* ed. Geoffrey Parker (New York: Cambridge University Press, 2005), 167-169.

his subjects was at stake each time his army campaigned. Moreover, the balance of power caused allies to be distrustful of each other and each other's objectives. Therefore, military operations of the period tended to be quite cautious, campaign objectives tended to be quite limited, and campaigning tended to be restricted to defined seasons.[62]

Warfare remained a bloody affair despite the "reasonable" manner that characterized matters of state during the age. To prevent desertion, soldiers moved in close formation and under tight control. Commander could not trust them to forage on their own (an activity also discouraged for effect on civilian population), which tied armies closely to magazines and supply depots. Consequently, movement was slow and operational reach limited. This made it relatively easy to evade battle if one chose to do so. Soldiers of the age regarded battle almost as an activity of last resort. Moreover, despite the high casualty rates, battle tended not to be decisive because exploitation and pursuit was too problematic. As a result, siege and maneuver characterized warfare, rather than bloody decisive battle.[63]

Soldiers volunteered for military service for a variety of reasons, of which patriotism was not one. Motivation included poverty, alcoholism, to escape punishment, stupidity, and perhaps out of a romantic sense of a soldier's life.[64] These factors, coupled with the fact that massed volley fire from a well-formed line was the most effective method of applying the fire of smoothbore muskets, meant that drill and harsh discipline were critical. Drill and harsh discipline bonded the unlikely types into highly professional automatons able to stand and face volleys of musket fire at almost point blank range. Battle was normally decided when one side broke. Therefore, those commanders best able to minimize desertion and elicit automatic responses from their soldiers tended to be the more effective.[65]

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[62] Guerlac, *Vauban*, 91-95.
[63] Ibid.
[64] Colin S. Gray, *War, Peace, and International Relations: An Introduction to Strategic History* (London; New York: Routledge, 2007), 36.
[65] Geurlac, *Vauban*, 93-94.

Communications technology in the eighteenth century was only a little more advanced than that employed in ancient times. The speed of communications was, at best, as fast as a horse. This primitive state of communications technology meant that for most of recorded history commanders in chief had to take care of many things that later could be left to subordinates. Consequently, the most important actions could transpire only in the presence of the commander.[66] For that reason, commanders tended to temporarily relinquish control over much of their forces. The same problem that determined methods of battlefield command governed operational level command. As long as commanders regarded rapid and reliable communications between mobile forces over long distance as impractical, armies had to stay close together for their own safety.[67] Van Creveld observes that, "Operational intelligence and planning consequently remained both intermittent and sufficiently simple to be carried out mainly by the commander himself until the eighteenth century and even beyond."[68] Immediate personal observation of most of the battlefield was virtually no different for a commander in 1770 than for one in 500 BC. Nevertheless, commanders after 1700, unlike their forebears, tended not to fight personally.[69]

Technology and organization placed limits on the ability of armies to gather, transmit, and process information, and consequently on their size and the nature of missions they could undertake.[70] The larger an army was, the more difficult it was to command, because armies tended to stay together in one mass under the direct supervision of their commander. Therefore, roughly 60,000 troops was the maximum that an individual could manage.[71] Nevertheless, armies were relatively simple and did not require a general staff to function. Therefore, staffs of the

[66] Van Creveld, *Command in War*, 55.
[67] Ibid., 56.
[68] Ibid., 57.
[69] Ibid.
[70] Ibid., 58.
[71] Christopher Duffy, *The Military Life of Frederick the Great* (New York: Atheneum, 1986), 304.

eighteenth century tended to be small and concerned mainly with the administration and management of the army.[72]

Frederick and the Conduct of War

At the heart of Frederick's talent as a commander was his ability to apply what the general wisdom of contemporary theorists and other military practitioners recognized as important. While this point may seem absurdly obvious, it is important because to understand what makes a great commander, it is necessary to recognize that expertise is an essential foundation. It is also important to recognize that expertise is not an innate personal quality. Commanders derive expertise from intense study and reflection on the art of warfare. Frederick viewed the study of warfare as an exercise that was essential and intellectually valid.[73] Of course, experience is important in acquiring that theory, but experience alone is insufficient. Reflection is necessary to turn experience into knowledge. As Duffy points out, "principles [may] be deduced from a continuous evaluation of one's own experiences, and the officer who failed to make this effort would end his days like the pack mule who followed Prince Eugene on his campaigns, and remain just as ignorant as when he set out."[74] Nevertheless, battle is a rare event. Experience is not something easily acquired, and a commander must enter his first experience of command in battle armed only with what he has learned via other means. In Frederick's case, he drew this learning from the study of history. Therefore, expertise was an important factor in the command of Frederick the Great.

Frederick was a historian of some stature. He had a strong view as to the usefulness of history to reveal relationships of cause and effect, allowing for derivation of fundamental principles. Frederick recognized the danger of imitation of past actions for he knew that no two situations were alike. For example, Frederick's study and reflection led him to understand the

[72] Van Creveld, *Command in War*, 35-38.
[73] Duffy, *The Military Life of Frederick the Great*, 300.
[74] Ibid.

complex relationship among territory, sustaining an army, and defeating the force of an enemy. While territorial aggrandizement would have almost certainly been a goal of Frederick's, the seizure and control of territory was important strategically and operationally. Territory provided the means to feed what might be close to 100,000 men and 48,000 horses on campaign. The need for fodder meant that by occupying border regions and eating them out, a commander could deprive his enemy of their use for weeks or months during the campaigning season. While it was possible to supply an army with dry fodder, the limitations of eighteenth century communications severely constrained the speed and range of maneuver. Therefore, the occupation of important border territories proved to be an effective means of securing oneself from invasion. To this end, Frederick also understood that by keeping an enemy penned up in an area, he could cause them to forage themselves out of supplies and be forced to decamp.[75]

Frederick's deep study and reflection allowed him to understand the role of uncertainty, chance, and confusion in battle. Management of large-scale battles was very difficult in this period of massive, but unitary armies using linear tactics. A force once engaged in battle was effectively lost to the control of the commander. Frederick endeavored to minimize the consequences of this loss of control through the use of long marches, the oblique order, drill, and discipline. By these measures, Frederick sought to get around the limitations of the command systems of the day. Frederick sought to extract the greatest possible positional advantage relative to the enemy from the marching power and discipline of the Prussian troops before the degradation of control set in. Therefore, the greater part of Frederick's instructions to his generals related to administration (feeding, moving, and encamping) of the army. He prepared his army accordingly, employing artificial and demanding drills in peace to sharpen the wits and responses of the soldiers in battle. Through study, experience, and a superior intellect Frederick developed a very good grasp of how far the army could move in a certain time and over different types of

[75] Ibid., 300-301, 305.

terrain. All this allowed him to commence battle from a position of advantage, thus mitigating, to some extent, the inevitable loss of control in battle.[76]

Another factor that set Frederick apart from other commanders was the extraordinary capacity of his mind to deal with a wide range of diverse factors. Whereas Frederick acquired his expertise, his intellect was arguably congenital (although certainly cultivated with wisdom). He developed a coherent military system that addressed the specific unique circumstances of Prussia in the eighteenth century. This ability to design a military system that seamlessly incorporated strategic aims, social tendencies, political constraints, cultural conditions, contemporary technology, and human nature is an example of a mind capable of complex thought. It also highlights his ability to apply creative thought to design coherent responses to contemporary challenges. A superior intellect enhanced Frederick's expertise.

According to biographer Christopher Duffy, "Frederick began the process of making war when he would draw up one of his 'projects of campaign'."[77] He would consider all the factors at hand such as the nature of theatre of operations and the nature of his enemy. His analysis tended to be qualitative rather than quantitative, for Frederick recognized that other variables were more important than mere ratios. For example, Frederick was well aware of the fact that belligerents might be able to call on allies for support. Frederick always considered the problem in the context of the contemporary political scene. He projected himself into the mind of the enemy commander and asked, 'what kind of design would I be forming if I were the enemy.' He recognized that warfare is a practical enterprise and therefore action rather than reaction tended to provide the most favorable circumstances.[78] Frederick believed "it is better to forestall the enemy, than to find yourself anticipated by him."[79] To this end, he recognized the unique war readiness of the Prussian army relative to other European forces, and sought to take advantage of this wherever

[76] Ibid., 306-307, 318.
[77] Ibid., 301.
[78] Ibid.
[79] Ibid.

possible. He knew also that his territory was unsuited to defensive warfare, which contributed to Frederick's tendency to preempt.[80] Consequently, Frederick's army was the first into Silesia in 1740 and first into Saxony 1756.[81] Preemption provided Frederick a great advantage in each case because it enabled him to attack his enemies independently before they were able to come together and overwhelm him. Frederick recognized that action, guided by a holistic design that took into account the specifics of his particular context, was imperative.

The circumstances described above represent just a small cross section of the complex set of variables that was Frederick's problem. Yet, despite this complexity, Frederick managed to command his army and fulfill his role as monarch very effectively. It is not within the scope of this paper to explore Frederick's ability as a monarch, but it is fair to conclude that this could only have added complexity. Yet, it may also have worked in Frederick's favor. As monarch and commander in chief, he could ensure that politics, strategy, and tactics were a coherent whole. Frederick's guiding idea that provided this coherence was a belief in the importance of the offense and the inevitability of the defense leading to defeat. The coherence of Frederick's designs was an important characteristic of his command.

Frederick was the eyes of his army. He had a small staff and distrusted second hand information. *Coup d'oeil* in the eighteenth century consisted largely of a military appreciation of terrain. Consequently, Frederick would make every effort to reconnoiter the key terrain himself.[82] Nevertheless, despite being a master in the conception of his battles and campaigns, Frederick was less capable in the dynamic circumstances of battle as evidenced by his excessive haste at Kolin and Torgau, and panic at Mollwitz and Lobositz.[83] Nevertheless, Frederick had a certain calm about him, and he would continue to decide and effect things even if he seemed to have an

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[80] Ibid.
[81] Jay Luvaas, *Frederick the Great and the Art of War* (New York: Free Press, 1966), 3-4, 6.
[82] Duffy, *The Military Life of Frederick the Great,* 326.
[83] Ibid., 323.

incomplete or inaccurate understanding of what was going on.[84] Therefore, despite a lack of presence of mind, Frederick had a resilience and calm that enabled him to continue to affect his circumstances amidst the friction, confusion, and danger of battle.

In his younger years, Frederick sought rapid decision in order to defeat his enemies before they could concentrate overwhelming force against him. However, Frederick's emphasis on the offensive was never absolute. Later, when writing about ridding himself of an enemy and the conduct of battle, Frederick no longer had in mind the annihilation of his enemy (which under the conditions of the time was scarcely possible) but winning the time and freedom to redress a deteriorating state of affairs at the other end of the theatre of war. By June 1757, Frederick knew the war was going to be a long one so he put into effect this strategy of interior lines to deal with the massive alliance gathering against him in the campaigns of Rossbach and Leuthen.

The strategy of interior lines is in essence the idea of maneuvering rapidly with the bulk of one's force to deal with one threat then reorienting the bulk of the force against another, thereby achieving optimal local force ratios against numerically superior enemies. Reorientation is rapid because the force is operating on shorter routes and closer to magazines. The stratagem served as a multiplier of forces and Frederick's army could not have survived without it. Nevertheless, Frederick regarded it not as a superior way of warfare, rather as an undesirable expedient that corresponded to the unfavorable circumstance of a war against a powerful alliance.[85] The strategy of interior lines demonstrates Frederick's capacity for creativity and his appreciation that a successful strategy is contingent on the context in which it is applied. This relatively simple design was a coherent response to a complex set of unique variables that included not only military but also political, cultural, and economic factors present at the time. Frederick also recognized that he could not sustain this particular strategy indefinitely.

[84] Ibid., 310.
[85] Ibid., 302-303.

Frederick's way of war evolved. Perhaps the most celebrated of Frederick's creative adaptations was the development of the oblique order. The oblique order was an almost pre-battle movement, where Frederick took advantage of the relative march speed, quality, and discipline of the Prussian troops to place the bulk of his force on an enemy's flank, thereby mitigating the Prussian Army's relative inferiority in numbers.[86] It evolved over several years until its most effective practice at Leuthen in 1757.[87] Nevertheless, the oblique order was not "some sort of secret weapon that Frederick trotted out whenever he needed it."[88] Nor was it the end of the evolution of Frederick's way of warfare. The oblique order proved disastrous against Austrian artillery at Prague in 1757. Thereafter firepower took on a much more important role in battle and the use of entrenchment, woodlands, and hilltops became more commonplace.[89] Frederick went into a long search for an effective counter response. "This led to the indecisive slaughter at Zorndorff, defeat at Kunersdorf and costly victory at Torgau."[90] Adaptations included greater reliance on artillery focused on a single point on the enemy's line, greater use of diversions to achieve superiority at the decisive point, and the use of a third line of reserves, demonstrating a capacity for learning and adaptation, and an ability to recognize that context is critical.[91] Circumstances change, enemies adapt, and problems transform, making old solutions redundant.

Despite his reputation as a martinet, Frederick devoted considerable energy to maintaining informal authority over his men. Frederick's courage was undoubted. The death of several horses from underneath him enhanced his reputation for courage. In battle, he maintained an air of Olympian serenity. Frederick chose to wear a simple uniform without a crown, and tended to quarter himself in a tent in the field among his men. Even when he was older, he would choose a single room house with his men in tents immediately outside. He would regularly stroll

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[86] Robert M Citino, *The German Way of War: From the Thirty Years War to the Third Reich* (Lawrence: University Press of Kansas, 2005), 50-51.
[87] Duffy, *The Military Life of Frederick the Great,* 311.
[88] Citino, *The German Way of War*, 51.
[89] Duffy, *The Military Life of Frederick the Great,* 309.
[90] Ibid., 312-313.
[91] Ibid., 316-317.

amongst them and ensured that they always saw him despite the conditions. He allowed a certain degree of familiarity and liked to appear infallible, so much so that his staff did not like to approach him when they saw he was in a condition that threatened his self-esteem. Frederick also understood the value of good order and discipline to maintaining military spirit, and recognized the value of spirit in battle. Frederick understood the value of nurturing a deliberate and well-crafted persona, image, and reputation. This served to inspire his men to great efforts even in the darkest moments.[92] The manner with which Frederick presented himself to his soldiers was an important factor in his command.

The Foundations of the case for an Essence of Command

The combination of Frederick's intellect and a thorough education in the art of war, along with his particular position as both monarch and commander-in-chief, enabled him to produce a coherent solution to the strategic problems facing Prussia at the time. This solution was not merely strategy in the sense of deciding what actions to take, but a comprehensive design, incorporating a range of factors from the organization of the army, the nature of its training, the command system, and so much more. It was congruent with Frederick's character and with the political, social, and technological constraints of the time. Frederick was also a man of action. While it is clear that thought preceded action and decision, action was the dominant element of Frederick's command. In Frederick's case, action was a continuum, acting against an enemy before and during battle, but also establishing and projecting an inspirational persona; motivating and inspiring soldiers; and maintaining high levels of discipline and training. All these things existed primarily in the realm of action rather than thought. Frederick possessed extraordinary nerve in order to act in light of the uncertainty and risk inherent in war. Above all, Frederick reveals the imperative of context. Factors such as the causes of war, the nature of international

[92] Ibid., 323-324, 328, 336-338.

relations, technology, domestic political circumstances, culture, commander's personality, and commander's personal desires and ambitions are inseparable from the function of command.

These insights form a hypothesis as to the essence of command. Given that the basis of these insights is the analysis of just one commander, they provide a dubious foundation for making any strong conclusions about the essence of command. An analysis of Napoleon - a very different commander in his own unique circumstances - should amplify, refine, or disprove this hypothesis; or illuminate aspects of Frederick that might not seem to be significant in isolation.

Napoleon

Napoleon Bonaparte was the model for Clausewitz' concept of military genius. His talent in handling the *Grand Armee* led to the conquest of most of Europe. Like Frederick, he was both oligarch and commander-in-chief, but Napoleon came to power because of merit and a dose of good luck. Napoleon established himself as a great leader of men during the revolutionary period at the siege of Toulon and during his triumphs in Italy in 1796. His talents refined and reached their height during the battles of Ulm, Austerlitz, and Jena in the period 1805-1806. The superiority of his army, particularly during the early years, was as much a product of the opportunities created by the French Revolution as Napoleon's skill at wielding it. The Revolution unleashed a new way of warfare that took the rest of Europe many years to adapt. Nevertheless, Napoleon's capacity to exploit these opportunities to their fullest potential makes him one of the greatest commanders. An analysis of Napoleon's way of warfare should build on the early insights into the nature of command gleaned from Frederick. To this end, it is necessary to understand how warfare had changed from Frederick's time before analyzing Napoleon himself.

Warfare and Command in the Age of Napoleon

Not a lot of years separated Napoleon and Frederick. In fact, the technology of warfare had hardly changed. The equipment and arms used by Napoleon were virtually the same as those used by Frederick. Nevertheless, the changes in war were as vast as any before or since. These changes were a product of social change brought about by the French Revolution and represent a military revolution in their own right. The French Revolution was the catalyst for a new form of national warfare. It changed French society in a way that allowed France to mobilize its people through the *levee en masse* on a scale never seen before and provided the opportunity to

implement the innovations espoused by the eighteenth century military theorists. These changes made the old armies of the *ancien regime* obsolete.[93]

Armies went from being the private property of the monarch to the property of the public. The French authorities extended the officer ranks to those outside the aristocracy and talent became a more significant criterion by which officers were selected and advanced. Funding, direction, and regulations derived from the peoples' elected representatives rather than the monarch and the army served the nation, not the king. Consequently, greater funds, resources, and manpower were available for the army and war. It also meant that soldiers tended to be more loyal to the army because they considered it their own.[94] Therefore, armies grew in size. The size of a French field army grew from 40,000-50,000 men prior to the Revolution to over half a million men by 1812.[95]

The antiquated systems of the *ancien regime* were incapable of managing such large armies. Frederick had pushed the limit of the number of troops that a commander could maneuver and control in one unitary body. The new armies of the Revolution were so massive that a single individual could no longer wield them leading to the practice of centralized control and decentralized execution. A massive army controlled in this manner was not just a luxury to explore but also a necessity for France. The Revolution had created so many enemies that the French Army had to manage hundreds of thousands of troops spread across several theaters and consuming immense quantities of resources. This required new organizations, including new agencies, larger staffs, and multiple levels of the organization. More significantly, it resulted in the division of the unitary armies of the *ancien regime*.[96]

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[93] John A. Lynn, "Nations in Arms," in *The Cambridge History of Warfare*, ed. Geoffrey Parker (New York: Cambridge University Press, 2005), 193-197.
[94] Richard A. Preston, Alex Roland, and Sydney F. Wise, *Men in Arms: A History of Warfare and its Interrelationships with Western Society*, 5th ed. (Fort Worth, TX: Holt, Rinehart and Winston, Inc, 1991), 159-61.
[95] Ibid., 169.
[96] Gunther E. Rothenberg, *The Art of Warfare in the Age of Napoleon* (Bloomington: Indiana University Press, 1978), 208-210.

Under Frederick, several regiments lined up acting as one unit. While one might regard the regiments themselves as sub-divisions of the greater organization, they did not act with initiative in battle. New organizations above the regiment emerged after 1789. These included the brigade, the division, and the corps. Each level of organization had its own commander and staff. At the Corps level, infantry, cavalry, and artillery combined to form self-sufficient "sub-armies." Each was roughly equal to the size of one of Frederick's field armies. Greater loyalty, self-sufficiency, and staffs meant that corps and divisions could operate semi-autonomously giving French commanders greater scope for action. Consequently, a commander could control much larger forces than was possible during Frederick's time.[97]

Armies not only grew larger, but also more complex. Sophisticated administrative staff and procedures were necessary to direct and supply these armies. Even in Frederick's time, military experts in handling the details of marches, quartering, engineering, topography, and supply had grown up around the commander in the form of a rudimentary staff. Training colleges for these staffs had begun to appear towards the end of the eighteenth century. Nevertheless, these staffs did not have advisory functions. Their role was purely technical and to translate a commander's design into orders. Because communications remained so cumbersome, and given the inaccuracy and poor quality of mapping, the critical function of topographical reconnaissance was still primarily the function of the commander. It was not possible to sit over a map, visualize key topographical features, and draw up detailed plans for battle. Consequently, the *coup d'oeil* of the commander, in its purest sense, remained critical. The ability to recognize the possibilities, but also the limitations posed by time, space, troops, topography, often necessitated the commander seeing the ground for himself.[98]

In a nationalist army, the greater loyalty and ideological motivation of the soldiers meant that commanders could rely on them to stay and fight when deployed forward in companies of

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[97] Robert M. Epstein, *Napoleon's Last Victory and the Emergence of Modern War* (Lawrence: University Press of Kansas, 1994), 17-18.
[98] Rothenberg, *The Art of Warfare in the Age of Napoleon*, 208-211.

skirmishers. In Frederick's age, infantry entrusted to skirmish would often make off or at best lay down. More importantly, the changes brought about by the Revolution allowed for the use of the assault column, which allowed for more rapid and flexible employment in battle. The column required less training, less control, and less discipline for effective employment, which suited France's massive post Revolution army.[99] Nationalist armies had a significant logistic advantage over enemies. Soldiers of nationalist armies were far more willing to live lean and were able to live off the land because national loyalty reduced the possibility of desertion. Unconstrained by large administrative trains and magazines, armies were able to move relatively swiftly and gain decisive positional advantage before battle.[100]

Command and control technologies of the period constrained the opportunities presented by greater tactical and operational flexibility. In fact, these technologies were virtually unchanged from those used by Frederick. Consequently, instructions tended to be very simple and clear. Friction meant that simple was better. For example, the Austrian orders at Austerlitz amounted to about seven hundred words. French generals granted their subordinates an immense degree of freedom. Specific timings and other coordinating instructions were almost non-existent. This was in large part because of the slowness of communications of the age, and an implicit understanding of the nature of friction in battle. Coordination occurred largely by event and through shared understanding of the commander's simple design.[101]

Once battle had started, written orders were rare. Often the general would deliver his orders personally or send an aide with the message. Given the state of communications technology, a general could only influence a battle once engaged, by committing fresh troops from his reserve. Given this fact, and the fact that communication systems were slow and cumbersome, one of the critical tasks of the commander was to judge the best opportunity to

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[99] Lynn, "Nations in Arms," 197.
[100] Ibid., 202.
[101] Rory Muir, *Tactics and the Experience of Battle in the Age of Napoleon* (New Haven, CT: Yale University Press, 1998), 143-144, 146.

commit his reserve. Judging this moment was, of course, no easy task. It is not possible to know, for example, if the present moment is the critical time, or if events later will transpire such that a better opportunity presents itself. It was critical for the commander to position himself to be best able to determine the right opportunity in terms of time and place, and to be able to communicate his instructions with sufficient speed so that the opportunity would not be lost.[102]

Napoleon and the Conduct of War

A new army emerged from the French Revolution. It had a new organization and a new purpose, and provided Napoleon a superior instrument to wield against his enemies in Europe. This new army was capable of achieving rapid, decisive victories in battles of annihilation, which allowed Napoleon to make and enforce far-reaching demands on other states. No longer was Napoleon constrained to limited objectives as were the statesmen of the *ancien regime*. Whereas armies of the *ancien regime* tended to avoid battle, Napoleon could force battle by moving at speed on a broad front along multiple roads.[103] Others at the end of the previous regime introduced most of the reforms that Napoleon used to such great effect. The Republican Armies under Generals Francois Kellerman, Jean-Baptiste Jourdan, Jean Moreau, and others refined the tactics put forward by theorists such as the Comte de Guibert, Jean-Baptiste de Gribeauval, and Jean du Teil. These reforms dominated the Revolutionary and Napoleonic periods. Napoleon also inherited an officer corps that was both militarily professional and no longer restricted to the old nobility. It had become a Revolutionary officer corps, established on the principles of merit and talent for promotion. Thus, Napoleon started from a highly advantageous position with a large and experienced army and a loyal officer corps, whose fortunes and advancement were tied closely to Napoleon's own fortunes. Like Frederick, Napoleon's genius did not lie in any special or unique understanding of warfare. Instead, it lay in his ability to do what the conventional

[102] Ibid., 148-149.
[103]Epstein, *Napoleon's Last Victory,* 4-7, 17-18.

wisdom recognized should be done. Napoleon's talent lay in his expertise and the use he made of his fantastic new military instrument.[104]

The Revolution created many enemies for France. Given the enormity of the threat, France took advantage of the new national spirit and introduced a *levee en masse* in order to raise an army of sufficient size to deal with it. The scale of the increase in size of the French army, and the speed with which the French raised it, meant that there was insufficient time and resources to devote to the degree of training given to soldiers and units of the *ancien regime*. To mitigate the lack of skill, Napoleon's armies excelled in the employment of the tactic of the assault column. Employment of the column required relatively little skill, and its flexibility and rapid employment provided a major advantage over the traditional line.[105]

Napoleon also grasped the importance of mass in modern warfare. He used this principle, along with the greater speed and flexibility of his army, to overwhelm his enemies by using the bulk of his forces to gain local superiority and then destroy them piecemeal before they could unite. The superior mobility and agility of Napoleon's armies allowed him to position them on an enemy's rear without too much concern about them threatening his.[106] The relative speed and mass advantage of Napoleon's armies was facilitated in part by his introduction of the *corps d'avant-garde* or *corps d'armée.* These replaced the division as the main tactical organization of the *Grand Armee*. The corps was a self-contained army comprised of infantry, artillery, and cavalry numbering anywhere from 10,000 to 30,000 men. Although not an original concept, Napoleon took full advantage of it. Each *corps d'armée* was capable of holding off greatly superior forces for several hours until support arrived. Therefore, an army made up of various corps, was able to move in widely separated units. The distributed advance of multiple corps was

[104] David G. Chandler, *The Campaigns of Napoleon* (New York: Macmillan, 1966), 136.
[105] Preston, *Men in Arms*, 162-173.
[106] Ibid.

deceptive to the enemy, easier on logistics, and is what gave Napoleon's forces a decisive mobility advantage.[107]

The division of the *Grand Armee* into sub-elements also helped to mitigate friction. Generally, Napoleon dispersed his corps on the march so that they were in mutually supporting positions and able to come to the aid of each other in a timely manner. It also allowed Napoleon to concentrate force at the decisive point of battle without direct orders or immediate control.[108] He issued broad but clear guidance and expected his subordinates to use their initiative. Napoleon's command system was vastly different to the direct control exercised by Frederick, and provided a degree of coherence that was previously only possible through the immediate presence of the commander.[109] Therefore, coherence of the force was as important to Napoleon as it was to Frederick, although he achieved it in a very different manner.

All of the measures above allowed Napoleon to pursue a coherent approach to warfare that aimed at the destruction of the main body of the enemy's army in a single decisive battle. By destroying his enemy's field army, Napoleon hoped to break the national will to resist, thereby allowing him to dictate the terms of peace.[110] This approach, coupled with specific campaign designs derived from Napoleon's comprehensive analysis of each of his opponents, were decisive given the nature of his opponents prior to 1809.[111] However, by the Franco-Austrian War of 1809 Napoleon's opponents had modernized, changing warfare in ways that would undermine his approach. According to historian Robert Epstein, firepower became an increasingly greater factor in battle as armies grew larger and employed greater quantities of cannon. Napoleon did not keep pace with this change in the scale of battle. Consequently, the "god of battles, was overthrown by the dynamics of warfare that he had created but did not understand."[112] While he was still

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[107] Epstein, *Napoleon's Last Victory,* 4-6, 17-18.
[108] Van Creveld, *Command in War*, 60-61.
[109] Ibid., 75-76.
[110] Chandler, *The Campaigns of Napoleon,* 141.
[111] Ibid., 145.
[112] Epstein, *Napoleon's Last Victory,* 178.

pursuing battles of annihilation, campaigns of attrition were becoming the norm.[113] Therefore, Napoleon seems to amplify the imperatives of context and design raised during the analysis of Frederick.

Napoleon's genius related closely to his personality. Napoleon was an egotist. He was supremely confident and optimistic. He possessed great energy, ambition, and willpower. He was unperturbed under stress. He possessed a vivid imagination, which allowed him to envisage how things might be after a series of possible actions and events similar to the skill of a master chess player. Napoleon had an amazing capacity for work. He could apply his mind for extraordinarily long hours, often going with little to no sleep for extended periods.[114] According to Martin Van Creveld, "daylight hours saw ceaseless and prodigious activity: travelling, inspecting, reviewing, meeting with subordinates and with other dignitaries, reconnoitering, gathering intelligence, questioning prisoners and local inhabitants, all of which enabled him to see and hear for himself and prevented him from becoming the prisoner of his staff."[115] The nature of Napoleon's qualities (and those of Frederick) seems to suggest that personal qualities are an important factor in the nature of command. In fact, Napoleon's character was such that his whole command system was tailored to it to an extent like no other.[116] Therefore, a superior intellect was a critical aspect of Napoleon's command.

Van Creveld contends that it was the "emperor's brain that served as the *Grande Armee's* central information-processing machine," which explains why speed and decisiveness were so characteristic of Napoleon's way of warfare.[117] Napoleon eliminated intermediate tiers, conjecture, and discussion from the decision-making process and command function. An insight into Napoleon's style of command and way of warfare are to be gleaned from his words, "One

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[113] Ibid.
[114] Van Creveld, *Command in War*, 63.
[115] Ibid., 64.
[116] Ibid., 62.
[117] Ibid., 68.

jumps into the fray, then figures out what to do next."[118] Napoleon would concede to risk and limited understanding, and use action to compensate. In a way, it was a tendency to experiment and accept the unexpected, including negative consequences. Napoleon's method was to avoid planning operations through to a logical conclusion, seeking to create opportunity through action.[119] His emphasis on action to create the opportunities that he could not foresee must have depended largely on a robust character that could accept the risks inherent in such an approach.

Nevertheless, the weakness of the command system built around Napoleon was its dependence on a single man.[120] Napoleon's health, well being, state of mind, or death could clearly affect the command system in catastrophic ways, which suggests that some redundancy in the command system is important, or even necessary. Yet this deduction would miss the point presented by Napoleon's case. Napoleon and the command system built around him were effective. Taken as a whole, the command system, coupled with Napoleon's character, and given the political and social conditions of the time, was coherent, relevant, and very effective. Napoleon's effectiveness as a commander relates to his particular context.

One of the most important factors of Napoleon's personality and its effect on his abilities as a commander was his capacity to inspire others. Napoleon was a charismatic leader. He was adept at motivating individuals. He believed in the maxim that "moral force rather than numbers, decides victory."[121] Napoleon instituted a system of awards, which encouraged greater effort and greater loyalty. He promoted those who performed well regardless of their social background, thereby linking the fortunes of his officers to his own continued success and maintenance of power. Napoleon was skeptical of the value of rhetorical speeches at the moment of battle.

> It is not set speeches at the moment of battle that render soldiers brave. The veteran scarcely listens to them, and the recruit forgets them at the first discharge. If discourses

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[118] Dietrich Dorner, *The Logic of Failure: Why Things Go Wrong and What We Can Do to Make Them Right* (New York: Metropolitan Books, 1996), 160-161.
[119] Frederick W. Kagan, *The End of the Old Order: Napoleon and Europe, 1801-1805* (Cambridge, MA: Da Capo Press, 2006), 330.
[120] Van Creveld, *Command in War,* 65.
[121] Steven Englund, *Napoleon: A Political Life* (New York: Scribner, 2004), 105.

> and harangues are useful, it is during the campaign; to do away with unfavorable impressions, to correct false reports, to keep alive a proper spirit in the camp, and to furnish material and amusement for the bivouac.[122]

Napoleon's inspiration was as important to the *Grand Armee* as it was to Frederick's army, although the manner with which they provided the inspiration and maintained their informal authority over their respective armies was very different. Both inspired largely because of the manner with which they presented themselves.

Developing the Case for an Essence of Command

Napoleon confronted very different constraints than Frederick and a unique strategic problem. Yet, like Frederick, Napoleon was both oligarch and military commander. Like Frederick, Napoleon's problems were ill defined; and like Frederick, Napoleon developed a coherent solution. Napoleon's problems and their solutions incorporated so many variables that neither the problems nor the solutions could be broken down into sub-elements and analyzed discretely. Napoleon's uniquely personalized command system, for example, was not a deliberate choice to address a specific problem; nor was the use of the assault column; nor the emphasis given to mass and battles of annihilation; nor was the *levee en masse*; and nor were Napoleon's decisions made in the heat of battle. Therefore, command is influenced by, and in turn influences, a myriad of factors, and is perhaps as much a part of any strategic or operational problem as it is a solution. Command systems, for example, pose their own unique set of advantages and solutions, but they also provide constraints. In Napoleon's case, the choice to decentralize the execution of operations was a means of addressing the problems presented by friction (among others), yet this decentralized execution meant that Napoleon was unable to exercise the same degree of control over his army as Frederick was able to do. These differences do not really matter though, because the choices were relevant to the problems confronting the two commanders, and while not optimal, were at least relevant to their particular context. Frederick could not, for example, sub-

[122] Muir, *Tactics and the Experience of Battle in the Age of Napoleon* , 160.

divide his force and expect it to function as Napoleon's did. What seems to matter is that all the decisions are internally logical, and are relevant to the variable conditions presented at the time. Therefore, the essence of command is in large measure about establishing and maintaining internal and external coherence in the face of the unique and dynamic conditions of campaigns and battles. The importance of coherence suggests that context is also in some way related to the essence of command.

Maintaining coherence is in large measure a function of mitigating the effects of friction. Both Napoleon's and Frederick's command systems, stratagems, tactics, military organizations, and other features of their command, were in large measure designed to be congruent with friction, and therefore, to mitigate its effects. Nevertheless, they did so in very different ways. Napoleon's primary means were the subdivision of his organization, and the greater freedom he granted his subordinates to use their initiative. Napoleon understood the nature of friction and developed solutions that were congruent with it and other social, cultural, political, and strategic factors. Napoleon's military organization and command system, as well as the way he exercised control of his forces in battle, maintained the internal coherence and cohesion of his forces when control had largely been lost. Frederick did this too; however, his circumstances led him to emphasize training, drill, and positional advantage in order to mitigate the effects of friction. Therefore, command is, in many ways, the art of providing some structure to something that is in reality without structure. The implication is that command in battle is not separate from command before battle. The things that provide structure and coherence in the most chaotic of circumstances are as much related to organization, psychology, training, discipline, morale, culture, and technology, as they are to the judgment of the commander in battle. Both Frederick and Napoleon seem to have developed unique but coherent approaches to warfare that alleviated the requirement for perfect understanding of events and detailed control of one's own forces. Design and coherence might therefore be elements of the essence of command.

Napoleon's genius lay in the realm of action. Therefore, despite the fact his military instrument changed little during his time, his genius was able to carry him on to meet with continued success even during the years of decline. Perhaps the key aspect of this particular genius was Napoleon's ability to grasp rapidly the essentials of a highly fluid situation.[123] He was able to hold in his mind an extraordinary array of information on many things both civil and military. Processing information, judgment, and decision-making are therefore necessary, but command is above all a practical rather than a theoretical, conceptual, or philosophical thing. The command system is therefore most useful to a commander if it allows him to fulfill the very practical functions of persuading, inspiring to action, explaining to soldiers why they are risking their lives, and to give their possible sacrifice meaning. To this end, the analysis reveals that personal example often speaks more than words. The command system's ability to support the commander in acquiring, processing and disseminating information; making decisions; and coordinating and controlling forces must therefore be a lesser function. Therefore, the imperatives of personal example, a strong nerve, and action somehow relate to the essence of command.

Both Frederick and Napoleon had powerful minds. Napoleon in particular had an extraordinary capacity to hold and manipulate a complex range of things in his mind all at once. It is difficult to ignore the apparent link between intelligence and effective command. Given the analysis so far suggests that command is essentially an exercise in design, the essence of command must have something to do with intellect. The ability to comprehend the multitude of factors that confronted both Frederick and Napoleon, and then design a coherent solution comprising among other things organization, command system, persona, and strategy required a powerful mind. Perhaps, it is a particular sort of intellect that might be different for each commander. Frederick's *coup d'oeil* was apparent prior to battle, whereas Napoleon's was superior during battle. Therefore, intellect, coupled with expertise, might be two of the factors that constitute the essence of command.

[123] Gray, *War, Peace, and International Relations,* 41.

In the next section, an analysis of Eisenhower should provide further amplification and refinement, of what is developing into a clearer picture of the essence of command. Eisenhower's circumstances are again unique; therefore, the analysis may disprove some of the hypotheses formed so far. The analysis of Eisenhower will cap off the search for an essence of command and provide the vehicle for synthesis of the analysis of all three commanders.

Eisenhower

Dwight D. Eisenhower was Supreme Allied Commander from 1942-1945. He grew up in small town America, became an officer through West Point, and would serve for over two decades in a tiny interwar army without any personal experience of combat or command. At the outbreak of the Second World War, he found himself on a rapid path of ascent. Whether by good luck, design, or both, Eisenhower found himself leading the invasion of North Africa in 1942. Despite making countless and considerable errors during the operations in North Africa, Sicily, and Italy, Eisenhower survived and was chosen to lead the invasion of Europe in 1944. Eisenhower united two great armies in one of the largest campaigns in the history of warfare and led them to victory.

Eisenhower's circumstances were vastly different from those of Napoleon and Frederick. Technological and social change in the intervening one and a half centuries was immense. Several intervening revolutions in military affairs had changed warfare such that it would have been unrecognizable to either Napoleon or Frederick. Unlike the other two, Eisenhower was not the head of state, but subordinate to the governments of at least two powerful democratic nations. Nevertheless, Eisenhower's abilities as a statesman were as crucial to the Allied success as his abilities as a military chief. It is exactly for these reasons that Eisenhower provides a perfect test for the developing hypothesis for the essence of command. Before looking more closely at Eisenhower and completing the development of the hypothesis for an essence of command, it is necessary to see exactly how warfare had changed since the time of Napoleon.

Warfare and Command in the Second World War

During the second half of the nineteenth century, warfare underwent significant change. This change in warfare was the product of three revolutions in military affairs: the industrial

revolution, the managerial revolution, and the mechanization of warfare.[124] The evolution of the modern industrial nation state allowed governments to mobilize manpower, industrial power, and economic power in the prosecution of war on a scale far beyond anything previous. This meant that the size of armies grew almost exponentially. Developments in the accuracy, range, and rates of fire of modern weapons increased the scale of modern combat.[125] Soldiers no longer stood and fought in relatively tight cohesive bodies, but used cover and concealment.[126] The advent of steam power and the telegraph meant that armies mobilized and arrived in a theater of operations with greater speed and predictability than ever before. Moreover, the size and complexity of modern armies meant that they required industrial-style planning and coordination.[127]

By the turn of the twentieth century, decisive victory had become a very difficult thing to achieve. Modern armies were predominantly infantry and could produce masses of firepower. However, they were relatively immobile. The development of the railroad and telegraph in the nineteenth century increased the operational reach of armies but once removed from the railway, armies moved at the same pace as all armies before. Furthermore, the enormous size of armies and the scale of their logistics tied them to railheads. Consequently, the decisive maneuvers characteristic of the age of Napoleon were more difficult to achieve. During the First World War, the inadequacies of the telegraph combined with the relative immobility of armies once decoupled from railways, soon became apparent. Communications by telegraph proved too slow to allow for fleeting opportunities to be exploited. Even when communications were timely, the forces themselves tended to lack the speed necessary to respond in time. Thus, armies frequently squandered opportunities to exploit success. Consequently, during the First World War, massive

[124] These revolutions are defined in Walter Millis, *Arms and Men: A Study in American Military History* (New York: New American Library, 1956)
[125] Bruce W. Menning, "Operational Art's Origins," in *Historical Perspectives of the Operational Art*, eds. Michael D. Krause and R. Cody Phillips (Washington D.C.: Center of Military History, 2005), 4.
[126] Martin van Creveld, *The Art of War: War and Military Thought* (Washington D.C.: Smithsonian Books, 2005), 124-125.
[127] Menning, "Operational Art's Origins," 4.

forces tended to fall upon one another, unable to maneuver decisively, resulting in battles of attrition.[128]

During the interwar period, Western armies worked hard to resolve these problems. Mechanization in the form of tanks, aircraft, and trucks – all present in the First World War, but in crude forms – alleviated the mobility problem and radio allowed more effective command and control. The ability to move in a third dimension provided by airpower expanded the battlefield to include deep military targets and a nation's means of waging war. The intelligent combination of these developments provided the solution to the problems revealed during World War I.[129] These factors also meant that armies in World War II were far more complex than the instrument wielded by Napoleon. While more mobile and flexible, armies of the Second World War had new constraints to deal with. For example, living off the land, which contributed to Napoleon's flexibility and speed, had long ceased to be an option. The new armies were of such scale and complexity that vast logistics networks spanning continents were necessary to sustain them in the field. In order to sustain these armies, a nation had to mobilize its entire industrial and economic potential. Consequently, logistics became crucial. "Gasoline and lubricants – not the speed of an army's tanks – became crucial factors limiting a modern army's mobility."[130] This increased complexity and sophistication stands in stark contrast to the warfare of the *ancien regime* and the Napoleonic period.

Although the radio proved an important part of the solution to the problems of the First World War, it did not mean that command and control of operations of was any easier. Historian Robert Citino contends:

> …effective use of combined arms, difficult enough to achieve when it was merely a matter of coordinating infantry and artillery, had now become exponentially more difficult. Operations had become a very intricate minuet, with fast-moving mechanized columns, infantry, artillery (now mechanized as well), and aircraft all playing an essential

[128] Robert M. Citino, *Blitzkrieg to Desert Storm: The Evolution of Operational Art* (Lawrence: University Press of Kansas, 2004), 3.
[129] Ibid., 3-4.
[130] Ibid., 4.

> role. Because the music was so much more complex, the conductors of the orchestra, the officers, required more and better training than ever before; so too did the musicians, the men and units that were performing the most complex military operations in the entire history of war.[131]

The combination of these factors meant that the stunning German victory of 1940 proved to be the exception rather than the rule. The mass of one force bludgeoning the mass of another characterized campaigns of World War II to a greater extent than breakthrough, maneuver, and decisive victory.[132]

The size and complexity of modern armies required industrial-style planning and industrial scale coordination similar to the complex industries that had evolved because of the industrial revolution. Planning and coordination required specific technical and specialist expertise.[133] Therefore, commanders relied on committees, general staffs, and bureaucracies to command and control their forces effectively. More importantly, the complexity and scale of warfare had grown beyond the power of a single mind to comprehend and process. The information requirements alone were overwhelming.[134] Therefore, the role of the staff expanded to include not only technical expertise and orders preparation, but also a general advisory role as well as oversight of the execution of orders. The expansion of the role of military staff led to the development of a professional class of officers trained in the techniques of planning, as well as training, equipping, and deploying mass armies. These officers were educated and trained in professional institutions.[135]

Eisenhower and the Conduct of War

Eisenhower never held a command position prior to his appointment as Supreme Command Allied (Expeditionary) Force in the Mediterranean Theater of Operations. Therefore,

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[131] Ibid., 4.
[132] Ibid.
[133] Menning, "Operational Art's Origins," 4.
[134] Van Creveld, *Command in War*, 235-236.
[135] James D. Hittle, *The Military Staff: Its History and Development* (Harrisburg, PA: The Stackpole Company, 1961).

he was under intense initial pressure. Official and public expectations of him were well beyond his experience.[136] Not surprisingly, Eisenhower made many mistakes during his first year of command. Nevertheless, while operations in the Mediterranean theater through 1942-1943 delayed the final invasion of Europe, arguably delaying the defeat if Germany, they had important, although perhaps unintended, benefits. North Africa became a laboratory. At the tactical level, the Americans adapted to the harsh lessons of their initial battles. At the operational level, the Allies learned how to plan and execute massive amphibious operations, and mitigate the difficulties of Allied cooperation. Eisenhower, in particular, learned to appreciate the complexity of handling a massive joint allied force conducting amphibious landings. As time went on, he became more skillful, gradually mastering a job that was really without precedent in the history of warfare.[137] Biographer Stephen Ambrose observes, "In his first combat experience, Eisenhower was unsure of himself, hesitant, often depressed, irritable, liable to make snap judgments on insufficient information, defensive in both his mood and his tactics. Nineteen months later, he had improved dramatically."[138] Therefore, the campaigns in the Mediterranean provided valuable time in which Eisenhower matured and gained confidence, and demonstrate that learning and understanding are very much products of action. This supports the supposition that action is in some way related to the essence of command.

The operations Eisenhower led in the Mediterranean and European theaters were of a scale and complexity greater than any before. Moreover, their success depended largely on the successful execution of amphibious landings, which were inherently risky, particularly with inexperienced troops. Eisenhower's ability to remain steady throughout these campaigns, particularly in the early campaigns when he lacked experience, was a measure of his nerve. Operation Torch provides a good example. It depended to a large degree on the success of the

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[136] Norman Gelb, *Ike and Monty: Generals at War* (New York: Morrow, 1994), 13.
[137] Stephen E. Ambrose, *Eisenhower, 1890-1952* (New York: Simon and Schuster, 1983), 194-195. Also Rick Atkinson, *An Army at Dawn: The War in North Africa 1942-1943* (New York: Henry Holt, 2002), 537.
[138] Ambrose, *Eisenhower, 1890-1952,* 195.

initial amphibious landings and the reaction of the Vichy French, which was in no way certain. It was Eisenhower's first combat command and America's first action in the European theater. Adding to the difficulty was the fact that Eisenhower's immediate subordinates were all senior and more experienced than he was and he was yet to establish any credibility.[139] Eisenhower wrote to Marshall prior to the landings, "if a man permitted himself to do so, he could get absolutely frantic about questions of weather, politics, personalities in France and Morocco, and so on."[140] That Eisenhower managed at all is an indication of his nerve, and supports the supposition that nerve relates to the essence of command.

As the commander of Allied forces in the Mediterranean, and later as the Supreme Allied Commander in Europe, Eisenhower created and managed the sometimes-tense British/American alliance, and led it to victory. Many argue that these massive Allied forces would never have functioned without him. Their design and function were unique, for there was no precedent. Moreover, Eisenhower recognized that the unity of the British and American Armies was necessary for success. Therefore, he believed the design and effective function of his command to be one of the most important tasks of the war. For that reason, Eisenhower was uncompromising on Allied unity.[141] His passion permeated throughout the rest of the staff.[142] Eisenhower was open and gregarious. He had a warm smile and an easy manner. He was modest, courteous and straightforward. Consequently, almost everyone liked him.[143] Eisenhower's popularity was important given his lack of command credentials. People seemed to trust Eisenhower instinctively. His measured approach to command conveyed a sense that he was an honest broker "whose central purpose was the defeat of the enemy, rather than the pursuit of any national

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[139] Ambrose, *Eisenhower, 1890-1952*, 200.
[140] Ibid.
[141] Ibid., 186.
[142] Ibid.
[143] Gelb, *Ike and Monty: Generals at War*, 12.

agenda."[144] Nevertheless, many of Eisenhower's key staff were men he knew previously. Altogether, these factors allowed Eisenhower to produce a headquarters that could "utilize the resources of two great nations . . . with the decisiveness of a single authority."[145] All these factors suggest that Eisenhower's success was in large measure related to the fit of his character to the circumstances; supporting the hypothesis, that context is key element in the essence of command.

Eisenhower also had a good grasp of the complexity of the problem facing the Allies. He recognized that a resounding victory was important but so was how that victory came about.[146] Eisenhower was able to produce a coherent solution that took into account the policies and grand strategies of the Allied governments, the need for an enduring solution to the conflict, the German strategic context, the state of affairs of the armies he commanded, and myriad other factors. He did so in light of the ambiguous, variable, and uncertain nature of many of these factors. For example, Eisenhower recognized that the unique character of the American soldier had strategic and operational implications. Ambrose observes that most of the American soldiers were young conscripts, well educated, of independent mind, and contemptuous of the ways of the old army. Eisenhower recognized their strengths as well as their weaknesses. They were optimistic and possessed good mechanical skills. On the other hand, they were poorly trained, tended to be soft, and quick to complain.[147]

Eisenhower's knowledge of the strengths and weaknesses of his own troops is likely to have been a major factor in his decision to pursue a "broad front" strategy for the defeat of Nazi Germany. Ambrose contends:

> Eisenhower's military theory was straightforward and aggressive. Like Grant in the Virginia Wilderness in 1864, he favored constant attack, all along the line. He was an advocate of the direct approach and put his faith in the sheer smashing power of great armies. Eisenhower's decision to fight on a "broad front," part of the original plan, repeatedly came under question during the attack across France. He was once accused of

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[144] US Army Center of Military History, *Dwight David Eisenhower* (D.C., 1990) http://www.history.army.mil/brochures/ike/ike.htm, March 2009.
[145] Ambrose, *Eisenhower, 1890-1952*, 187.
[146] Ibid., 339.
[147] Ibid., 177.

> having a mass-production mentality, which was true but beside the point. He came from a mass-production society, and like any good general he wanted to use his nation's strengths on the battlefield.[148]

There were also political imperatives that contributed to Eisenhower's choice of a "broad front" strategy. It was important, for example, that both the British and American publics believed their armies were contributing equally to the defeat of the Germans. Moreover, it allowed all the military power of the Allies to be brought to bear against the Germans, rather than just a portion. Lastly, the "broad front" strategy provided a greater likelihood of identifying and exploiting opportunities. Many of his subordinates, particularly Montgomery, resisted Eisenhower's strategy. However, Eisenhower resisted all efforts to change his mind.[149] Eisenhower's grasp of the Allied problem is evidence of a superior intellect and expertise; his "broad front" strategy, coupled his emphasis on Allied unity supports the supposition that design and coherence are elements of the essence of command; and his resilience in the face of persistent criticism is evidence of the importance of a strong nerve.

Eisenhower recognized that regardless of the quality of his plans and orders, success would ultimately come down to the soldiers executing them.[150] Therefore, he understood the importance of inspiring his soldiers. This was a particularly difficult task for Eisenhower. Unlike Frederick and Napoleon, whose soldiers saw them most of the time, the size of Eisenhower's armies meant that it was not possible for his soldiers to see him so often, if at all. Consequently, Eisenhower attempted to inspire confidence, trust, and cohesion in his soldiers by manufacturing a particular persona. He promoted the use of his nickname "Ike."[151] This nickname, coupled with his choice of words and widespread knowledge of his small town background, gave the impression that he was "just plain folks." It allowed the citizen soldiers to identify with their leader more readily and perhaps endure more of the sacrifices that he demanded of them.

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[148] Ibid., 315.
[149] Carlo D'Este, *Eisenhower: A Soldier's Life* (New York: Henry Holt, 2002), 594-598.
[150] Ibid., 294.
[151] Ibid., 172.

Eisenhower recognized the power of the press and manipulated it in order to convey his persona to as wide an audience as possible. His manipulation of the press was not just for the sake of his soldiers, but also for the domestic populations of the Allies. Ambrose contends, "Eisenhower believed that a democracy could not wage war without popular, widespread support for and understanding of the war effort, which only the press could supply."[152] When talking to soldiers, Eisenhower was far more personal than other senior officers were. Recognizing that the soldiers were citizens first and soldiers second, he would tailor his conversations to personal and family matters.[153] In these various ways, Eisenhower managed to endear himself to the millions of soldiers he commanded. The success of Eisenhower's well-crafted persona in inspiring his armies supports the hypothesis that presentation relates to the essence of command.

The Essence of Command

Despite major changes to the conduct of war in the nineteenth and twentieth centuries, Eisenhower's command challenges were of the same kind experienced by Frederick and Napoleon. Despite Eisenhower's unavoidable disconnection from his armies because of their scale and complexity, the same things mattered. Determination and resilience were imperative for Eisenhower, as too were a superior intellect and expertise. His problems were manifold. Therefore, the design of a sophisticated solution that was congruent with his unique context was fundamental. While technology provided new efficient means of communication, it also changed warfare such that Eisenhower's capacity to be seen and heard by his soldiers was diminished. Realizing the imperative of presentation, Eisenhower invested considerable energy to working around the limitations of his command system. These efforts, as well as the steady improvement of Eisenhower and his armies, were largely products of trial and error, and therefore, action.

[152] Ibid., 173-176.
[153] Ibid., 294.

In the previous section, the monograph tentatively put forward eight themes as a hypothesis for an essence of command. These themes are context is key; there is an imperative for action; there is an imperative for resilience or nerve; there is an imperative for presentation and theater; design is of the essence and requires a superior and specific sort of intellect; there is an imperative for study or expertise; and eliciting and maintaining the coherence of the force in relation to its context is fundamental. Eisenhower seems to confirm that these eight themes do constitute the essence of command. Moreover, taking the three case studies together, the centrality and critical importance of the commander in each context suggests that there is a ninth imperative, command is inherently of the individual.

The Essence of Command

The case studies posit that the essence of command consists of nine imperatives: context, action, nerve, presentation, design, intellect; expertise, coherence, and the individual. This section briefly outlines each of the imperatives in order to establish a solid lens through which to analyze NCW theory.

The first imperative of command is context. Frederick, Napoleon, and Eisenhower came to their positions of command for different reasons, each brought with them unique personal qualities, and each succeeded for very different reasons. Moreover, each commander existed in a different society and commanded under very different politico-strategic circumstances. The implication is not just that it is unlikely that Frederick could have commanded as well as Eisenhower if made the Supreme Allied Commander in 1944, it is that Frederick would never have been exposed to the same problem, and even if he were, his very presence would change the nature of the problem, thus making the comparison pointless. Political scientist, Eliot Cohen, illustrates the point, "There is no uniform standard for the selection of generals. The dogged defender and the audacious attacker, the flexible and resourceful improviser and the disciplined man of method, the young and the old, the excitable and energetic, and the phlegmatic and unflappable all have their place. Leadership is contextual."[154] The point is that reproducing Napoleon is not the fast track to victory, nor is producing and applying command systems that ignore or attempt to negate the variations in commanders and the strategic circumstances in which they find themselves. Therefore, context is an imperative of command.

The second imperative is action. Clausewitz describes war as a duel.[155] This violent competition between two or more sides is the generator of a "friction" that is not present in other enterprises. Like two wrestlers, the commanders of two opposing armies cannot be certain of what the other intends. Even if one did have the power to read the mind of the other, there is no

[154] Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: Anchor Books, 2003), 217.
[155] Clausewitz, *On War*, 75.

guarantee that the next move or series of moves by one will be optimal in light of the manifold possible responses and actions of the other. The point is that understanding does not necessarily result in optimal action. Moreover, in the absence of understanding, action can change the situation such that any prior understanding by the other party becomes irrelevant. Command, therefore, is about driving events, dictating circumstances, learning through interaction, and creating opportunity, and in so doing, making understanding less necessary. The fact that command tends to be active rather than thoughtful does not diminish the value of good command systems, thoughtful actions, or well-considered plans. Nevertheless, a commander can overcome an information disadvantage through his actions. These actions take place before battles, campaigns, and wars, (training, discipline, and organization) as well as once they are underway (willpower and inspiration). Napoleon's philosophy of war exemplifies the latter, whereas the approaches of Frederick and Eisenhower exemplify the former. Therefore, the rationale of command is action.

In order for a commander to act, particularly with little understanding of circumstances and little knowledge of the potential consequences of his decision, he must possess a particular type of resilience. This resilience is commonly referred to as nerve and it is the third imperative of command. Nerve captures the traits and temperament that comprise Clausewitz's genius. Field Marshal Bernard Law Montgomery described it as "that resolution and that determination which will enable [the commander] to stand firm when the issue hangs in balance."[156] Nerve is not an ability to calculate risk, but to withstand the strain of that risk on the commander. Risk is inherent in any military action and nerve is the particular quality that allows a commander to see the action through, regardless of the outcome. Napoleon's resilience through his defeats in the latter Napoleonic period is an example of this type of resilience. In relation to presentation, nerve is the ability to maintain one's composure, focus, and optimism when an outcome looks uncertain or

[156] Bernard Law Montgomery, *A History of Warfare* (New York: World Publishing Company, 1968), 15-16.

catastrophe looms. Frederick's optimism in the uncertainty of battle and the face of the superior coalitions massed against him are examples of this type of nerve. In relation to coherence, nerve is the maintenance of a suitable persona that continues to inspire in the face of overwhelming challenges, or to stick to a course that others may doubt. Eisenhower's resilience in the early stages of Operation Torch, the amphibious landings in Sicily and Italy, and the criticism of his "broad front" strategy are examples of this type of nerve. Therefore, nerve is imperative.

In order to be relevant, action must be guided by some sort of scheme. Therefore, design is of the essence. Design herein implies more than creativity, and more than planning, because it encompasses more than the mechanical or physical aspects of developing strategy and designing campaigns. A commander's design encompasses broad factors and constraints such as social factors, domestic issues, alliances, and the quality and character of one's soldiers; but more importantly, it encompasses, for example, the conscious or unconscious choice of how the commander presents himself, the commander's own character, his strengths and weaknesses, and his behavior and traits. These factors bear on the problem and constrain the design, although the elements of any given design are not discrete in the sense that they tend not to align neatly with subordinate parts of the overall problem.

Unlike other fields of design, military designs are extraordinarily dynamic and must be enduring as well as adaptive. Frederick, Napoleon, and Eisenhower built their designs around a few guiding ideas. These guiding ideas were those things that characterize the command of the particular individual. In Eisenhower's case, it was Allied unity and the strategy of the "broad front." For Napoleon, it was the self-contained corps and the strategy of the single point. For Frederick, it was training, discipline, and the strategy of interior lines. Nevertheless, a few guiding ideas are not enough. As Clausewitz' duel analogy implies, problems of war are not static. Each moment presents a new problem requiring a unique solution. As the Prussian Chief of the General Staff, Helmuth von Moltke, once said,

> Strategy is a system of makeshifts. It is more than a science. It is bringing knowledge to bear on practical life, the further elaboration of an original guiding idea under constantly changing circumstances. It is the art of acting under the pressure of the most demanding conditions…That is why general principles, rules derived from them, and systems based on these rules cannot possibly have any value for strategy."[157]

Commander's designs tend to be holistic, only loosely formed at the outset, probably largely subconscious, only partially articulated, and continually adapted to a changing context.

Closely related to the imperative of design is the imperative of coherence. It is the idea that decisions and the forces that execute them must remain relevant and cohesive in the uncertain, dynamic, and ambiguous conditions of war. Coherence is the foundation of generalship for it is the translation of politico-strategic context into coherent tactical actions. Maintaining coherence is also, in large measure, a function of mitigating the effects of friction. The command systems, stratagems, tactics, military organizations, and other features of the commands of Frederick, Napoleon, and Eisenhower were in large measure designed to be congruent with friction, and therefore, to mitigate its effects. Command is, in many ways, the art of providing some structure to something that is in reality entirely unstructured. The things that provide structure and coherence in the most chaotic of circumstances are as much related to organization, psychology, training, discipline, morale, culture, and technology, as they relate to the judgment and *coup d'oeil* of the commander. Therefore, the measures a commander takes in peace, or before a campaign, are inseparable from the actions he takes during a campaign.

Intellect is imperative for a commander to be able to formulate designs of the kind discussed herein. It is a particular kind of intellect that is very closely related to judgment. The military theorist J.F.C. Fuller, speaking of Ulysses S. Grant, described this particular form of intellect as a "gift of an historic imagination," enabling him to "take in at a glance the whole field of the war, to form a correct opinion of every suggested and possible … campaign, their logical

[157] See Dorner, *The Logic of Failure*, 97.

order and sequence, their relative value, and the interdependence of the one upon the other."[158] It is the power of the mind to comprehend the whole of a complex and dynamic problem from incomplete and inaccurate information and to maintain focus and clarity amidst multiple distractions, misinformation, uncertainty, and confusion. Frederick, Napoleon, and Eisenhower all confronted these circumstances and demonstrated intellects sufficient to comprehend the problems that they faced. Intellect encompasses the idea that some minds are better able to comprehend a complex problem than a group dedicated to detailed analysis. This idea should not imply that detailed analysis by a staff is without utility. Rather, the commander's mind is the ultimate machine that will process the results of the analysis, along with his own conceptions and biases, into a coherent whole. More importantly though, intellect implies a mind not only capable of comprehending the whole, but making effective and relevant judgments based on this comprehensive understanding. Given that action is an imperative of command, understanding is only useful when a commander translates it into action. Translating understanding into action is in large measure a function of judgment. The quality of a commander's judgment is the product of many factors not least of which is the nature of his intellect. Therefore, intellect is an imperative of command.

Intellect relates to expertise. Expertise is a process of education. Frederick, Napoleon, and Eisenhower were all masters of their trade. All three commanders were voracious readers, tutored at some point in their careers by other masters. The study of military history in particular is a common theme running through each of the case studies. Experience is certainly important, but, as in Frederick and Eisenhower's cases, many commanders do not have the chance to experience war before their first wartime command. Raw intellect alone cannot prepare the mind for wartime command no more than raw intellect can prepare the mind to teach calculus.

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[158] J.F.C. Fuller, *Grant and Lee: A Study in Personality and Generalship*, 1st Midland Book Ed. (Bloomington: Indiana University Press, 1982, c1957), 245, 248-249.

Therefore, the combination of intellect and expertise produces *coup d'oeil*. Consequently, expertise is imperative.

The penultimate imperative is presentation. A commander must present himself in one form or another to his followers. Presentation contributes in large measure to the maintenance of informal authority by inspiring, and instilling confidence and trust. According to John Keegan, "orders derive much of their force from the aura of mystery, more or less strong, with which the successful commander, more or less deliberately, surrounds himself."[159] He argues that mystification "supplies the medium through which love and fear, neither ever precisely defined, cajole the subordinate to follow, often to anticipate the commander's will."[160] Understanding between commander and followers is a function of how the commander communicates with his men, as well as the bond he establishes with them. Command requires the constant maintenance of informal authority, which is a commander derives from the impression he cultivates through constant demonstration. A commander who does not present himself in person, and who is not seen to share the risk that he imposes on his men, is prone to destroy the cohesion of his army, and therefore the coherence of his design. Frederick, Napoleon, and Eisenhower created unique and cogent personas congruent with the particular circumstances each faced. Therefore, presentation is imperative.[161]

Given the previous eight imperatives, it is clear that command is not a group exercise. The fact that command is a function of an individual appears self-evident in Frederick and Napoleon, who, because of their circumstances, exercised authority over their armies with little reference to others. Since the early nineteenth century, a steadily increasing array of staff, personal assistants, and bureaucracies developed to support the commander. Consequently, the design and planning of battles, operations, and campaigns grew more collaborative. However, the support of staffs, assistants, and bureaucracies is not at odds with the imperative that command is

[159] Keegan, *The Mask of Command*, 315.
[160] Ibid., 316.
[161] Ibid., 316-329.

of the individual. Stephen Ambrose's observation of Eisenhower prior to Operation Overlord illustrates the point:

> Overlord was the greatest amphibious assault in history, with the largest air and sea armadas ever assembled. It required, and got, painstakingly detailed planning, with thousands of men involved. SHAEF alone had a total strength of 16,312, of whom 2,829 were officers … There were in addition the staffs of the U.S. and British armies, corps, and divisions, all devoting their entire energy to Overlord. These vast bureaucracies did very well what they were created to do, but their limitations were obvious. They could suggest, plan, advise, investigate, but they could not act. Nor could any single member of the bureaucracies see the problem whole. Every individual involved had a specific given role to play and could concentrate on one set of problems; each staff officer was an expert struggling with his specialty. The officers could study and analyze a problem and make recommendations, but they could not decide and order.
>
> Someone had to give the bureaucracies direction; someone had to be able to take all the information they gathered, make sense of it, and impose order on it; someone had to make certain that each part meshed into the whole; someone had to decide; someone had to take the responsibility and act.
>
> It all came down to Eisenhower. He was the funnel through which everything passed. Only his worries were infinite, only he carried the burden of command.[162]

Therefore, command is an individual function.

The imperatives of command are not discrete, but interrelated. For example, a commander's presentation is as much a function of design as is the initial arraying of troops for an operation. Design is related to intellect and the provision of internal and external coherence. Coherence is related to the imperatives for action and presentation, and a bias for action necessitates a strong nerve. Expertise is related to design and intellect, while context determines how all these things are manifest. These imperatives are more than just a list of principles and personal traits. They are to some degree features of command regardless of any deliberate effort by the commander to address them. Yet it is certainly the case that the greater the intellect, the better the design, the stronger the nerve, and the more relevant the presentation, the better one is likely to command. According to historian Rory Muir, all that can be said about good generals is that they:

> … made few serious mistakes on the battle field and ruthlessly exploited the mistakes of their opponents; that they had a thorough knowledge of the practical mechanics of war: how long it would take for a division of, say, 8000 men to advance across 1,000 yards,

[162] Ambrose, *Eisenhower 1890-1952*, 292.

> deploying under enemy fire, and if it would then be in a state to climb a hill and assault some enemy batteries; that they had something of the chess player's skill of seeing several steps in advance where the move of every piece had implications for all the others, and, unlike in chess, where every piece on both sides could move simultaneously and none responded immediately to their commander's orders; and, finally, that they had the mental toughness to bear the responsibilities of command, the coolness in action to deal with sudden setbacks, and the character to risk defeat in order to gain victory.[163]

In this passage, Muir captures the essence of command. The nine imperatives that form the essence of command provide the lens through which the remainder of the monograph assesses NCW theory.

[163] Muir, *Tactics and the Experience of Battle in the Age of Napoleon*, 150.

Analysis

The analysis of the literature of NCW theory and command suggests that the NCW theorists built their theory from a narrow concept of command. The case studies conclude that there is more to command than the narrow take of the theorists. This conclusion brings into question the strength of their claims. This section evaluates the core elements of NCW theory through the lens of the essence of command in order to reveal the flaws in NCW theory and ascertain the strength of the theorists' claims.

Shared awareness, information superiority, and collaboration are core suppositions of NCW theory. Before commencing the analysis of NCW theory, it is necessary to review these terms. Shared awareness is "a state that exists in the cognitive domain when two or more entities are able to develop a similar awareness of a situation."[164] Shared awareness is the idea of all relevant actors having a common understanding of a particular circumstance. Information superiority is the achievement of a superior information position. It is "the operational advantage derived from the ability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same."[165] Alberts et al. argue that information superiority is a comparative or relative concept analogous to air superiority in that its value lies in its potential to enable military outcomes.[166] Collaboration "involves actors actively sharing data, information, knowledge, perceptions … or concepts when they are working together toward a common purpose and how they might achieve that purpose efficiently and effectively."[167] Alberts et al. contend that information systems will allow for greater collaboration, which they anticipate will deliver an enormous improvement in understanding and planning.[168] NCW theorists argue that the shared awareness, information superiority, and collaboration made possible by new information age technologies represent a reduction in the fog

[164] Alberts, *Understanding Information Age Warfare*, 26.
[165] Joint Publication 1-02, 263.
[166] Alberts, *Network Centric Warfare*, 55.
[167] Alberts, *Understanding Information Age Warfare*, 185.
[168] Ibid., 196-197.

and friction of war. Together, they set the conditions for the attainment of self-synchronization, improved speed of command, better decisions, and reduced risk.[169] This section will examine these four primary suppositions of NCW theory through the lens of the essence of command.

Self-synchronization

Synchronization is the "meaningful arrangement of things or effects in time and space."[170] Self-synchronization is synchronization achieved by lower-level decision makers "guided only by their training, understanding of the commander's intent, and their awareness of the situation in relevant portions of the battlespace."[171] According to Alberts et al., "A knowledgeable force depends upon a steady diet of timely, accurate information, and the processing power, tools, and expertise necessary to put battlespace information into context and turn it into battlespace knowledge."[172] Therefore, they argue, self-synchronization is dependent on accurate shared knowledge of the situation. This contention is not congruent with the imperative of action in command, which stresses that in the dynamic interaction between two opposing forces, understanding is rarely decisive because it is no guarantee of quality of anticipation, decision, solution, or execution. Command is about driving events, dictating circumstances, learning through interaction, and creating opportunity, and therefore makes demand for information a lesser function of command. Even if one were to accept the claim that new technologies will enable a significant reduction in the fog of war, a doctrine that depends on information and detailed understanding places a force at significant risk of dislocation should it lose or suffer a reduction in its capacity to provide a detailed and accurate shared awareness. Information becomes the single point of failure. The imperatives of action and coherence anticipate loss of control and lack of understanding.

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[169] Alberts, *Network Centric Warfare*, 72.
[170] Alberts, *Understanding Information Age Warfare*, 28.
[171] Ibid., 219.
[172] Alberts, *Network Centric Warfare*, 91.

The organizational structures, culture, and training optimized for an information rich environment are likely to be suboptimal in an environment that diminishes a commander's control and awareness (and that of his subordinates) because, as the theorists argue, the structure, culture, and training of military organizations will have to change in order to realize the potential of NCW. While self-synchronization is an achievable and valid goal, the action and coherence imperatives compel one to strive for self-synchronization not because greater understanding is possible, but precisely because misunderstanding and confusion are inevitable; solutions and decisions are not obvious; and there is no guarantee of perfect execution.

Auftragstaktik is a German term that means to provide only mission orders to subordinates, who in turn rely on their training, local understanding of their immediate situation, and understanding of their commander's broad intent to make tactical decisions. It is the cornerstone of the command doctrines of most Western armies. The basis for the idea is not the availability of information, but the lack thereof. Simple rules and techniques allow tactical units to cooperate with other tactical units in the absence of direction from a superior headquarters. This method conforms to the imperative of action because it elicits relevant action in the absence of supervision, control, and shared understanding. *Auftragstaktik* is about using self-synchronization to maintain coherence and action in light of the fog of war, whereas NCW is about using information superiority to reduce the fog of war to enable self-synchronization. The former is clearly the more robust method because the latter is vulnerable to a breakdown in the information system. Moreover, an abundance of information and perfect knowledge seems more suited to centralized command. Under circumstances of information superiority and shared understanding, it hardly seems necessary for subordinates to do anything other than what they are told by some superior all knowing entity. New technologies will almost certainly make self-synchronization easier. However, the basis for the use made of the technology ought to be the

premise that shared understanding and detailed knowledge is not possible, nor necessary. This idea constitutes an entirely a different use of the technology than what the theorists posit.[173]

According to Alberts et al. "The command function is not absent in self-synchronized forces; however, it does depend on achieving congruent command intent"[174] NCW theorists suggest that command intent will derive from an amorphous distributed command function rather than any single commander, hence the term "command intent" rather than the conventional usage "commander's intent." The theorists contend that command is distinct from control (the structures and mechanisms devised to enable commanders to manage risk) and that control is an instrument of command, whereas command is "the creative expression of human will necessary to accomplish the mission."[175] Accordingly, everyone in an organization can exercise command. Therefore, it is possible to move "from a concept of command that is tied to an individual commander to a concept of command that is widely distributed."[176] NCW theorists argue that widely distributed command leads to less hierarchical organizational structures, leading to fewer stovepipes, promoting more collaboration, and therefore greater tempo.

However, it is questionable as to whether it is possible for an unambiguous intent to derive from a distributed body of command. Intent is the product of design, and while functioning designs can emerge from leaderless groups (cityscapes for example), the efficacy of such an approach is doubtful. The coherence of such designs is likely to be a matter of chance. This study has revealed that design is a product of a particular intellect and nerve, because even though a team of staff may design, only one man can choose from among possible options, and only one man can accept the inherent risks.

Even if a group was to generate a design, and the responsibility for the design's risks somehow shared among many, someone must communicate the intent or plan. The form of

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[173] Van Creveld, *Command in War*, 270-271.
[174] Alberts, *Power to the Edge*, 27.
[175] Ibid., 18.
[176] Ibid.

presentation of the orders or intent is as important as the content, because the commander will call for those entrusted with the execution of the order to achieve extraordinary levels of effort and to expose themselves to extraordinary danger. These soldiers must believe in the instructions, be confident that their efforts will achieve something worthwhile, be confident that the plan will work, and be certain that their sacrifice will be worthwhile. It is unlikely that intent derived from and presented by an amorphous function will ever generate sufficient confidence or produce the requisite theater to elicit an inspired response. How does the network and flat distributed command function decide when face-to-face communication of intent is necessary? Can soldiers identify with a distributed command function as well as with a commander? Can the distributed command function demonstrate to the soldiers that it is willing to share in the risk that it has decided to expose the soldiers? To whom do the soldiers look to for steely nerve when they are at their lowest ebb when command is distributed? Does one overarching command intent suffice for every soldier and every sub-unit everywhere on the battlefield in a flat organization? The theorists do not address these questions.

Even in a networked organization that has not fully bought into the extreme claims of the theorists runs the risk of isolating the commander behind the network in much the same way that the partially functioning telegraph isolated commanders in the First World War. With the apparent ability to acquire the best understanding of the situation from the network and disseminate intent almost instantaneously, commanders may be disinclined to see for themselves, and may lose sight of the imperative of presentation. Clearly, NCW does not adequately address the nature of human authority-deference relationships; ignores the imperatives of presentation and nerve; and consequently is not congruent with the imperatives of the individual and context. Sustaining the coherence of a force and the mental state of soldiers and junior commanders amidst the extraordinary burdens of combat is likely to be sub-optimal under a distributed command function.

Improved speed of command and better decisions

According to NCW theorists, speed of command is "the time it takes to recognize and understand a situation (or change in the situation), identify and assess options, select an appropriate course of action, and translate it into actionable orders."[177] NCW theorists claim that NCW allows a force to increase its speed of command decisively, meaning to "recognize an information advantage and convert it into a competitive advantage by creating processes and procedures otherwise impossible."[178] The theorists contend that battlefield innovation and adaptation will compress decision timelines such that an information advantage turns into decision superiority over a non-networked force.[179] "The result is an ability to increase the tempo of operations and to preempt or blunt adversary initiatives and options."[180] The theorists capture the idea with the assertion that, "the potential for the cumulative effect of closely spaced events (such as a rapid sequence of local tactical disasters, occurring over a period of hours) to dislocate and confuse an enemy to the point that his warfighting structures quickly disintegrate, and his feasible courses of action are rapidly reduced" results in an "unequivocal military decision with minimum cost to both sides."[181] However, this assertion fails to address the imperatives of coherence, design, intellect, nerve, action, and context.

In light of these imperatives, increased speed of decision, while important, is unlikely to prove decisive. Not all designs will rely necessarily on a high speed of command, or even a speed of command that is greater than that of an enemy. The strategic objective may need something more than rapid military decision. For example, the way a commander reaches a decision may be critical to maintaining an alliance. Moreover, the need to communicate an order face to face to inspire soldiers at their lowest ebb may outweigh the advantage inherent in greater speed of

[177] Alberts, *Network Centric Warfare*, 163.
[178] Cebrowski, *Implementation of Network Centric Warfare*, 9.
[179] Ibid.
[180] Alberts, *Network Centric Warfare*, 55.
[181] Ibid., 56.

command. Speed of command implies an inherent need for decision, and that more decisions relative to the enemy are better. While increasing command speed is a valid goal, the real focus should be on the coherence and relevance of the decisions in light of a changing context (not just tactical, but politico-strategic). Blind pursuit of faster response times can lead a force to respond to non-action by an enemy who cannot respond within the same order of magnitude. The result can be multiple sub-optimal decisions to the enemy's one (or none).

The quality of a decision will depend more on the intellect of the decision-maker than the network, because it often depends on an understanding of things that lie outside the network's functionality. For example, the network will not reveal to a commander the frame of mind of his soldiers more readily than any system available today. The network will not provide a better understanding of current domestic social conditions and their impact on the soldier. The network will no better inform the decision-maker as to the impact of decisions on domestic popular opinion, and the consequent effects on national politics and policies. The network provides no advantage to a decision-maker confronted with the decision as to whether to sack a subordinate, and if so when, where, and how. While collaboration may assist the decision-maker given the complexity of modern war, the decisions themselves cannot be collaborative because opinions on these matters are likely to be diverse. There is no such thing as an optimal decision in such circumstances, and no amount of information will ever resolve a dilemma.

Therefore, while Alberts' argument that individual genius is no longer capable of comprehending the contemporary operating environment may be valid, collaborative integration is unlikely to prove much better. The level of collaborative integration made possible by NCW is certainly not capable of the claim made by Alberts et al., that NCW "transforms the decisionmaking process [such that] a whole set of decisions emerges where, given adequate quality and currency of information, and confidence in that quality and currency, the decisions are

obvious."[182] While advanced information technologies may generate a greater capacity to tap into "collective knowledge, or the ability to assemble existing information, reconcile differences, and construct a common picture," the advantages are unlikely to be that pronounced because understanding is not the same as developing a solution.[183] Therefore, the decision-maker can only aim to decide coherently and to possess the nerve to deal with the negative consequences.

The flaw here is that NCW does not account for the nature of human decision-making. While teams may design and groups may collaborate to decide, someone must ultimately be responsible for the design and the decision. For who decides on the compromises, who decides which interpretation of several conflicting pieces of information or advice to use, and who decides which option to take when various individuals in the collaborative process cannot agree? This study suggests that the minds of some individuals have a power to comprehend *enough* of a situation, no matter how complex and dynamic, and to know how to act congruent to their context. Therefore, some individual minds may be more powerful at exercising the functions of command than the collaboration of many.

The above notwithstanding, the quality and coherence of action is more important than the speed of command and quality of decision. Coherent and decisive action can dislocate a force that knows, decides, and acts faster than an opponent, because speed of command is not necessarily good command. Knowing and deciding are not the same as acting. Poor execution can make the best decisions, made rapidly or otherwise, immaterial. The quality of execution of a decision in war is a function of many factors that bear no relationship to NCW. These include the quality of the soldiers; the quality of their training; their morale and cohesion; their health and physical condition; the quality and condition of their weapons and equipment; their belief in the cause; their willingness to risk their lives; as well as weather, chance, and much more. These things lie in the realm of action for their understanding, creation, maintenance, or remedy.

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[182] Alberts, *Understanding Information Age Warfare*, 152.
[183] Alberts, *Network Centric Warfare*, 71.

Therefore, the requirement for the commander to see for himself remains. Therein lays the imperative of action.

Less Risk

According to the NCW theorists, emerging technology "allows [a military force] to move from an approach based upon the massing of forces to one based upon the massing of effects. As the ranges of … sensors and weapons increase and as [the] ability to move information rapidly improves" military forces are no longer geographically constrained. Therefore, the theorists contend that a concentrated effect is possible without the concentration of forces. "This allows [a force] to reduce [its] battlespace footprint, which in turn reduces risk because [it] avoid[s] presenting the enemy with attractive, high-value targets."[184] Sensor and shooter linkages allow an individual to apply effects in multiple locations without having to move, and without having to move the platform that produces the effect.[185] However, this concept of risk is a very narrow one. There is no doubt that the use of emerging technologies and the greater dispersal and precision they provide delivers tremendous tactical advantage if one defines risk in terms of the loss of life or equipment. However, risk in war is broader. Risk entails at least the possibilities of tactical, operational, strategic, and political failure.

NCW theory implies that standoff weapons are appropriate to all military problems and that a situation in which many soldiers and platforms in close physical proximity to an enemy will never be necessary. The theory generalizes what is clearly dependent on context. A better way of war does not guarantee victory. Indeed according to Chairman of the Geneva Center for Security Policy Francois Heisbourg,

> an immediate effect of RMA technology is putting constraints on warfighting: thus collateral damage in general, blue-on-blue casualties in particular, and targeting errors have become unacceptable because they can't be blamed on technological limits. Once such collateral damage was accepted as a misfortune of war. Greater battlespace

[184] Ibid., 90.
[185] Ibid., 91.

> awareness creates new standards of conduct, an evolution that one can only welcome—but which introduces new friction.[186]

Therefore, risk relates to context. Consequently, the NCW theorists' generalized claims regarding the reduction of risk are flawed.

[186] Francois L. J. Heisbourg, "Invitation to the Revolution: A Book Review," *Joint Forces Quarterly* (Autumn 2000), 107.

Conclusion

There is a correlation between command systems and warfare, and between the essence of command and the nature of war. The nature of warfare changes and evolves, whereas the nature of war does not. Similarly, command systems change and evolve, whereas the essence of command does not. Therefore, it is not surprising that emerging information technologies have already changed the tactics of many Western armies, yet there is little to suggest that the emerging technologies have changed operational art or the formulation of strategy in any significant way. Emerging technologies allow a soldier to acquire a target more rapidly and enable him to employ a capability beyond his primary weapon system to destroy it. Emerging technologies facilitate better cooperation between widely distributed units with loosely defined command and control relationships. Therefore, NCW is certainly an emerging theory of warfare, which is okay as long as the theory also accounts for the essence of command. It does not. NCW theory derives from a very narrow view of command based on transient command systems to the virtual exclusion of the enduring essence of command. Therefore, it is a flawed theory of warfare.

Western military professionals should take caution when heeding the contemporary military theorists' recommendation that Western militaries undergo radical change in order to exploit the opportunities provided by emerging information technologies. The recommendation has no grounding in the essence of command. By anchoring their theories to a narrow definition of command, the theorists are able to promise revolutionary changes and decisive advantages in warfare. However, when viewed through the lens of a more robust model of command, the potential falls far short of the promise. NCW provides a clear tactical advantage, but any attempt to optimize a force to maximize this advantage is likely to create a highly adapted organization that is difficult to command effectively and vulnerable to being made irrelevant by a change in context. According to political scientist Colin Gray, the main danger in the years ahead is that an armed force "will be so committed to their own network-centric transformation that they fail to

recognize the true character of potentially effective offsetting revolutionary change elsewhere."[187] While an initial advantage is enormous, success "is secured by the nation that wins the final combat in a conflict, not the opening round."[188] The translation of strategic objectives into tactical actions is an art that lies in the realm of action for which no amount of information, foreknowledge, collaboration, or command speed can guarantee success.

Although it is too early to draw any firm conclusions, recent Western experience in Iraq and Afghanistan seems to confirm the conclusions above. Partially networked forces appear to possess an overwhelming tactical advantage over their enemies in most engagements and battles, even in the many cases where their enemies hold the initiative. However, translating this tactical advantage and tactical success into strategic success appears to be no easier for contemporary commanders than it was for Frederick, Napoleon, or Eisenhower. David Petreaus' achievements in Iraq seem to point to the continued importance of the commander and the transcendence of the essence of command.

NCW has a patent allure. It promises the ability to have greater effect with fewer troops, less equipment, and less sacrifice. This promise is particularly attractive to contemporary Western armies, in which highly methodical, tactical-minded, and managerial approaches to warfare often displace creativity. The recent Western tendencies to view war in terms of cause and effect relationships; to use the highly methodical and pseudo-scientific targeting process for setting the course for future operations; and the predominance of staff driven decision-making processes exemplifies these approaches. Any significant adaptation to NCW (particularly a flattening of the organization's hierarchy) can only lead to greater centralized control and a greater dependence on information for effective execution of operations. Rather than optimizing a force for NCW, Western armies would accrue a better return on investment by giving new and greater emphasis

[187] Colin S. Gray, *Recognizing and Understanding Revolutionary Change in Warfare: The Sovereignty of Contex*t (Carlisle, PA: Strategic Studies Institute, 2006), 14.
[188] Ibid., 15.

to the selection and education of future operational and strategic level commanders founded in an understanding of the imperatives of command.

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