CHANGING MINDSETS TO TRANSFORM SECURITY:

Leader Development for an Unpredictable and Complex World

Edited by Linton Wells II, Theodore C. Hailes, and Michael C. Davies

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Center for Technology and National Security Policy
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Acknowledgments

Foreword

This book includes papers presented at the Third International Transformation (ITX3) Conference and Workshop on Leader Development, held in Washington, DC, at the National Defense University (NDU) on June 19-20, 2013, as well as a summary of the conference discussions. Sponsored by Headquarters Supreme Allied Commander Transformation (HQSACT), and supported by the International Transformation (ITX) Chairs Network, the conference brought together academics, policymakers, and practitioners to discuss the topic of *Changing Mindsets to Transform Security: Leader Development for an Unpredictable and Complex World.*

In July 2012, the Chairman of the Joint Chiefs of Staff, General Martin E. Dempsey, U.S.A., released the *Joint Education White Paper*, challenging those in the Professional Military Education and Joint Professional Military Education community to develop "agile, adaptive leaders with the requisite values, strategic vision and critical thinking skills necessary to keep pace with the changing strategic environment." In response, and to support NATO National Chiefs of Transformation efforts, the ITX Chairs Network issued a call for papers to increase the understanding of leader development, refine concepts, and develop content to be used in U.S. and international fora.

Seventeen of the papers published here were presented in Washington. Two of the papers were submitted before the conference, but the authors were not able to attend. The views are those of the individual authors. Based on the themes developed during the conference, the papers are grouped in five categories: 1) Human Dimension of Transformation; 2) Changing Nature of Adult Education—Drivers of Change; 3) Perspectives on Joint Education; 4) International Attitudes; and 5) Enlisted Education and Other Concepts.

We hope that you will find this volume useful, and welcome feedback.

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<tr><td>Gregg F. Martin</td><td>C. A. Johnstone-Burt CB OBE</td></tr>
<tr><td>Major General, U.S. Army</td><td>Vice Admiral, Royal Navy</td></tr>
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The International Transformation Chairs Network

The International Transformation Chairs (ITX) Network has its origins in the U.S. Professional Military Education system, but has become an international network, adding representatives from Australia, Singapore, Sweden, the United Kingdom, NATO's Allied Command Transformation (ACT), the NATO Defense College, and the Civil-Military Cooperation (CIMIC) Centre of Excellence. The ITX Chairs' mission is to "provide a forum to challenge thinking, leverage shared knowledge, and inform the debate about the national and international security implications of global transformation." The vision is to "help national security leaders and decision-makers prepare for a future filled with complexity, chaos, and surprise." The Network approaches transformation as a process that shapes the changing nature of competition and cooperation through concept development and innovation management across people, processes, organization, and technology. Research by the network includes cross-cutting interactions among those areas.

The Network's goals are to: 1) Inform ongoing debate with forward thinking concepts on major transformational issues; 2) Conduct research that identifies cross-cutting issues, opens new vistas, and validates (or challenges) current initiatives; 3) Serve as a resource in support of national and international leaders in realizing the transformational potential of comprehensive approach and smart power capabilities; 4) Support Professional Military Education, Joint Professional Military Education, and national security education development to prepare future leaders and decision-makers.

The network has published monographs, contributed to changes in U.S. military education policy, organized conferences and workshops, and supported a variety of U.S. Department of Defense and international activities.

In 2009, together with the Swedish Defence Research Agency (FOI), the Network co-sponsored the first International Transformation Conference, in Stockholm. The resulting publication, *Crosscutting Issues in International Transformation: Interactions and Innovations among People, Organizations, Processes, and Technology*, is in its second printing.

In 2010, the Network, in support of ACT, began to research ways to develop capability in support of the Comprehensive Approach. This work reinforced the natural synergy between the two organizations, both of which are catalysts for change and seek to bring together diverse audiences to promote learning and the development of solutions. The ITX2 Conference, *Capability Development in Support of Comprehensive Approaches: Transforming International Civil-Military Interactions* was held at the NATO Defense College in June 2011. The event provided valuable insights into how to organize capabilities in support of Comprehensive Approach situations particularly in mission areas such as stability operations, building the capacity of partner nations and humanitarian assistance/disaster relief. It also led to the development of the Quick Wins at Low Cost (QW@LC) initiative. This initiative leverages developments that are ongoing in the private sector to deploy capabilities in months for thousands of dollars, vice decades for millions.

Both of the previous conference publications are being used in United States, Allied, and Partner Nations Professional Military Education institutions as well as supporting ACT's national "Chiefs of Transformation" (COT) activities.

Current objectives for the ITX Chairs Network are to: 1) Help develop and educate leaders for an unpredictable and complex world; 2) Deepen ties to ACT and the CIMIC Centre of Excellence, to further the development of comprehensive approach capabilities; 3) Forge ties to the U.S. Joint Staff J-7 in support of Joint Education improvements and the development of concepts and capabilities; 4) Support ACT's COT programme of work and the yearly Chiefs Conference. In 2014, the Chairs will begin to examine how to lead transformation in a time of exponential change under fiscal austerity in the context of strategic rebalancing, while sustaining and evolving the Trans-Atlantic link.

Introduction

John P. Geis II

*Time is a river, a violent current of events, glimpsed once and
already carried past us, and another follows and is gone.*
Marcus Aurelius Antoninus, Meditations IV.[1]

What was true in Marcus Aurelius Anoninus' time is even truer today. It is not just technology that is changing; we live in a world of exponential change across all sections of society. The river of time now cascades turbulently across a set of cataracts and is rapidly propelling the ship of state toward a world that is hard to perceive.

This future world is not entirely unknowable. As with a French impressionist painting, it is possible to see the broad outlines.[2] The rapidly developing academic field of "Future Studies" has given strategic planners a myriad of methodologies with which to explore these outlines and to parse fact from likely fiction.[3] As a result, it is possible to bound the range of future possibilities and to scope the challenge of preparing leaders and organizations for a fast-paced and increasingly complex world.[4]

This volume examines the challenge of *Changing Mindsets to Transform Security* by tackling the question of how to develop new leaders for this changing and complex world. This introduction is devoted to underscoring the importance of education within the context of this dynamic environment. It will take a look at recent technological advances and describe how these developments will affect our security environment over the next 20 years. It will also examine some past failures of military education to prepare leaders for change, and underscore the terrible price paid when this challenge is not met. Lastly, this introduction will preview the following sections that examine the concepts of how one best develops leaders to adapt to the complex world in which we do and will live.

The junior officers and enlisted personnel entering our services today will be our senior leaders in 30 years. To understand the magnitude of change they will experi-

ence, it is instructive to look back 30 years to 1983 to remind ourselves of the world we have already left behind.

In 1983, most people received a majority of their news through newspaper, delivered right to their doorstep.[5] These papers were written by journalists, but the pages delivered to the customers were printed by a team of compositors, who painstakingly and manually loaded metal letter tiles onto a series of rails, that when inked, would print the typeset news stories onto the paper delivered to the customers' door. The electronic newsroom did not yet exist, and electronic typesetting had not yet reached the mainstream newspaper publishing industry.[6]

Sending written or printed correspondence was often the most efficient form of communication, but it was time consuming. For most, it involved retrieving a pen (or pencil), and paper from the desk drawer, hand-writing the text upon the paper, sealing the letter in an envelope, addressing the envelope and affixing a stamp, and placing the envelope in a U.S. Postal Service mailbox, wherefrom three to five days later, the recipient would receive it. Some had access to typewriters, but for most, hand-written correspondence was the norm, as neither email nor cell phones had yet been invented. Of course, if the whereabouts of the intended recipient were known, then one could dial (literally, as most phones were still rotary) their phone number and talk directly to one another. However, unless the called person was present to answer the phone, or had a personal secretary, there was no means to leave a message.[7] The result was that the hand-written letter was an often-used means of communication.

Capturing special family moments or news events in pictorial form was cumbersome, and required darkened rooms, the use of film, recapturing of silver, and often a wait of 3-5 days to get one's pictures.[8] Capturing images in commercial industry such as television stations was a little easier, as video tapes had been invented in the late 1970s, and were just making it into the industry in the early 1980s, making on-site video recording, and the term "breaking news," a new piece of the English lexicon, while making the term "film at eleven" a thing of the past as the video footage no longer needed laboratory developing.[9]

Medical science has also developed rapidly over the last 30 years, especially in areas of chronic disease. Diabetes was untreatable for many prior to mid-1983 when human insulin became available for the first time.[10] Before then, insulin use was risky, as it was extracted from cows and other animals, and often caused acute reactions. People with coronary artery disease had few treatment options in the early 1980s, as the intravascular stent had not yet been developed.[11] There were no drugs to lower

cholesterol, as the statin family of pharmaceuticals had not yet been invented.[12] Many modern vaccines, to include those for hepatitis had also not yet been created.[13]

Thirty years ago, there was no Internet. Personal computers were in less than five percent of U.S. households; and they stood alone as there was no means to connect them to other systems. Most had no more than 64 kilobytes of memory. In 1983, the word "broadband" referred to a rubber device to secure or tie things together that just happened to be wide. There were no magnetic resonance imaging (MRI) machines, fiber optic communications, or the Global Positioning System (GPS) navigation network. All commerce was still through a local store front or mail order. The most common way to capture solar energy was by sunbathing, and social networking was done almost strictly at cocktail parties.[14]

In short, the interconnectivity that has enabled exponential change to pervade both the physical and social sciences had not yet begun. Yet the interconnectivity—initially by mail, then by telephone, and most recently the Internet—is what economist Matt Ridley tells us has allowed mankind to develop what has been called a truly "collective intelligence" which is fostering increased inventiveness and greater cultural as well as technological change.[15] Ridley argues that this process of becoming narrower in one's specialty, and broader in one's commerce, is the fundamental story as to why and how humans have progressed from small nomadic families, through the agricultural era, to the point where we have prospered and live in modern cities today. Ridley further argues that the speed with which the specialization of commerce is growing is exponentially increasing.

These changes are moving the world into what has been called the "Age of Surprise."[16] Not only technologically, but also politically, we have moved into a world of things most did not expect to see or do. Unlikely countries—Iraq and Afghanistan—became central targets for U.S. attack. Terrorism, which was not considered an important threat 15 years ago, is now a major transnational concern.[17] Due, in part to social media, a block of Arab countries across the north of Africa have seen near-simultaneous revolutions against existing regimes.[18] The U.S. and the European Union economies, once thriving, have seemingly crashed with only anemic growth rates in the aftermath of the Great Recession, and as a result, the International Monetary Fund (IMF) is projecting that China will overtake the U.S. in total Gross Domestic Product by 2017.[19]

Technologically, the world is changing even more rapidly. In most fields of physical science, the amount of information is doubling every one to two years, meaning that more than half of what a college student has learned in their freshman year is

obsolete by the time they become a junior. For college professors, the same holds true. Those who stay away from the latest research in one's discipline for more than a year find that they are no longer current in their discipline.[20] More than 2.7 Zettabytes (2,700,000,000,000,000,000,000 bytes or 2.7 ZB) of information will be created this year alone—more than all the information created from the dawn of time up until the year 2011, and the amount of new information being created is accelerating.[21] The amount of new data creation will surpass 8 ZB by 2015.

The sheer amount of new information, all of which is accessible through the Internet, is transforming the nature of our world and the military functions performed within it. This is especially true in the empowerment of individuals or groups, and in the areas of intelligence, surveillance and reconnaissance. As much as the world of 30 years ago is a different place from today, so too will the world 30 years from now differ from the world in which we currently live. In many cases, these differences are likely to be more than most imagine.[22] Once called the world's first and only "hyperpower,"[23] the United States will soon find itself back in a multi-polar global structure. As stated earlier, the IMF forecasts China to pass the U.S. economically in 2017, yet the future is not likely to be a strictly bi-polar world. Brazil, India, Russia, Indonesia, and China are all on a path to either remain or rise to the status of major powers.[24] By 2040, a multi-polar international dynamic will be in play, and this dynamic will work differently from the unipolar world which formed the lens through which many of today's military members view their world.[25]

As the international political landscape changes, so will the threat landscape. The U.S. will no longer necessarily have a technological lead over potential adversaries into the future. In a 2008 study commissioned by the National Science Foundation, researchers at Georgia Tech concluded that China was already leading the U.S. in technological innovation.[26] Today, the U.S. military controls less than 5 percent of global research and development spending, and approximately 75 percent of this spending is now overseas.[27] This diffusion of technology continues to create new innovation, exponential technological change, and drives this technology into the hands of groups and individuals.[28] However, this also means that the same technology ends up in the hands of those who pose threats, whether as individuals or groups, and that it can likewise impact our surrounding environment.

Groups and individuals will have the capacity to affect the world significantly using several different technologies. Recent advances in the sequencing of the human genome and human proteins will soon allow development of cures to many diseas-

es.[29] Yet at the same time, a well-trained microbiologist with approximately $100,000 of laboratory equipment in an area as small as a one-car garage will be able to genetically produce a pathogen for which no immunity exists within the human species, threatening every man, woman, and child on the planet.[30] The proliferation of the knowledge behind the design of nuclear weapons has yielded numerous published concerns regarding terrorists or rogue nations being able to create their own devices and therefore terrorize large populations. Over time, this problem is likely only to get worse. Directed energy devices, especially high-powered microwaves, will have the capacity to destroy critical infrastructure potentially plunging regions into darkness for extended periods and disrupting the global economy.[31] Lastly, as Operation Aurora and the Stuxnet virus have demonstrated, the ability to wreak havoc on national critical infrastructure or major manufacturing facilities via cyberspace is a fully-demonstrated reality.[32]

The technologies to accomplish these events are becoming cheaper and more accessible. Today's smart phones, often "purchased" free of charge, contain more computing capacity than the most powerful computer in the world only 30 years ago.[33] The Cray X-MP computer of 1983 cost over $15 million. Today, a Samsung Galaxy S III Smart Phone is over 160 times faster, has 1,000 times more memory, and is 300,000 times cheaper than the Cray, making it on a cost per unit of computing capability a more than 48 billion times better.[34] The result is that what was once a national capability requiring advanced infrastructure simply to power and to cool the computer, now sits in the palm of an individual's hand—and is affordable for many even in the world's poorest countries. With this phone, one now has access to intelligence and satellite data once exclusively the purview of nation-states, and one can access the entire global information database colloquially called the Internet, on which lie the specifications, designs, and science behind critical infrastructure, medicine, or almost anything else which an adversary may seek to hold at risk. This empowerment of individuals and small groups is growing exponentially with time.

In addition to a new geopolitical and new threat environment, the future will also see a completely novel way of data collection for combat intelligence purposes. In recent years, programs that enable the fusion of data on the Internet, both in written as well as pictorial form, have been developed and are free of charge. The result is that in 2013 it is possible to create a three-dimensional representation, often to include interior spaces, of almost every building in every major city of the world. Further, in cities networked with camera or video devices, and in those cities with many social

media users, these three-dimensional representations can be produced in small-scale time increments, resulting in a four-dimensional view of the entire city being achievable using only open-source data on the Internet.[35] As a result, by 2030, it is likely that most Intelligence, Surveillance, and Reconnaissance missions of an adversary's capabilities will be accomplished through cyberspace, and will enable the gathering of data both interior as well as exterior to structures.[36] The criticality of the nation's and the military's cyber infrastructure and force structure takes on a radically increased and changed set of importance by this time-frame, and is not a set of challenges that can simply be managed away.[37]

Within the U.S. Department of Defense, we are failing to keep up with the pace of changing technology and innovation, and our Professional Military Education (PME) programs are already identified as a source of this problem. A recent U.S. Air Force study on the shortcomings in acquisition stated that the "Air Force professional military education (PME) was seen as providing future leaders inadequate guidance on how to foster innovation."[38] The report goes on to suggest changes in PME content to include courses on innovation be specifically required.

These failures to teach innovation properly to officers in past military education curricula are correlated with major failures in warfare. It is here that it is crucial our leaders be prepared, and it is here that the history-based curriculum of the military colleges has failed repeatedly to prepare the officers of each generation. To this end, the 1986 Goldwater-Nichols Act, among other directives, established a program requiring the training, tracking, and promotion of officers.[39] While the military has always sought to produce a professional officer corps that was both educated and aware of wartime techniques and strategy, the goals of military PME have not kept pace with the times.[40] Instead, PME courses seek to teach critical thinking from historical cases. In a study conducted in 2009, a survey of the curriculum of all senior PME institutions across the U.S. Government revealed that less than seven percent of the learning objectives across the entirety of all the curriculums had any future content, and all of these objectives looked out no more than five years.[41] The result was that the impact of rapidly changing technology and the adaptation to this technology was not being specifically taught at any of the institutions designed to prepare senior officers to lead at higher levels of command and policymaking.

To teach critical thinking in a way that will prepare future leaders to adapt, the curriculum must be largely designed to reach the highest levels of cognition and immerse the students in the prospective environment in which they are expected to

lead. Yet PME has routinely focused more on teaching what to think instead of how to think, thus producing graduates who lack basic critical thinking skills. The *Guidebook for Air Force Instructors* plainly states that 90 percent of material taught in Air Force Schools is at the lower levels of cognition.[42] While we operate in a military environment that demands higher-order cognitive skills such as the ability to infer and evaluate, we have created an educational system that stresses lower-order skills like recall and comprehension.[43] The fundamental problem confronting critical thinking was not in "identifying the necessity of the activity or its integral connection with the curricula and institutional mission. The difficulty . . . is getting faculty to define, discuss, and fully incorporate it into their learning activities."[44]

In order to build higher-order cognitive skills into the curriculum in a manner that will properly prepare officers to think critically about the future, it is essential to embed future concepts and scenarios into the curriculum itself, something not currently done in any U.S. DOD PME schools.[45] The American Philosophical Association (APA) conducted a major educational study on the teaching of critical thinking in U.S. schools and concluded:

> We understand critical thinking to be a purposeful self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which judgment is based…While not synonymous with good thinking, critical thinking is a pervasive and self-rectifying human phenomenon. To avoid confusion, the prudent measure would be *to create specific applications for critical thinking* prior to determining critical thinking curricula.[46]

Stated more plainly, high-level cognition of specific applications or scenarios must be an integral part of inculcating critical thinking processes, and any attempts to embed critical thinking into a curriculum without working to place the students in their respective potential future operating environments is destined for failure.

The failure of Professional Military Education institutions around the world has led to military members failing to foresee the consequences of future technologies at the cost of untold monetary expenditures and literally millions of lives. As new weapons development increasingly became the purview of scientists, not soldiers, and as military personnel were insufficiently educated on the science of new weapons, military cam-

paigns unnecessarily have ended in disaster. Azriel Lorber argues that this is the case of World War I, the Gallipoli campaign, and the failure to understand the importance of naval power, both surface and subsurface, in World War II, among others.[47] In more recent times, the same can be said for the failure to anticipate the challenges associated with improvised explosive devices in Afghanistan, and the assumption that eliminating the Iraqi Army would result in the U.S. being welcomed as conquering heroes there. As of this writing, over 8,000 coalition soldiers have paid the ultimate price for the lack of vision and critical thinking instilled in the leaders of these wars by our education system, and the monetary cost of these conflicts is on track to exceed $4 trillion[48]—a steep price to pay for an induced collective lack of vision.

This volume seeks to explore the challenges that underpin both past and potential future failures of our military education systems. It will examine the dynamics as to why these lessons and the associated critical thinking are so difficult to embed and teach in our curriculums. It will seek to offer some solutions that will better enable the U.S. and her allied and partner nations to move forward with greater efficiency and effectiveness in a rapidly changing world. This book is broken up into five related parts.

Part 1 explores *The Human Dimensions of Transformation*. Leadership development is, by its very nature, a human and individual endeavor. The four chapters in this section explore various aspects of the human condition and its relevance for future Professional Military Education. In Chapter 1, General George Casey, U.S.A., (ret.) begins by discussing the agility of thinking and leadership required of commanders and supervisors in a 'volatile, uncertain, complex and ambiguous' (VUCA) world, based upon his experiences in Iraq. He argues that volatility and complexity will increase over time, creating greater educational challenges for future generations. Chapter 2 from Dean Anderson and Linda Ackerman Anderson argues that the transformation required to deal with global complexity requires the military to develop leaders capable of 'conscious change leadership.' To engage in conscious change, a leader must be able to understand the limitation of their own mindset, as well as that of others, and be able to perceive the complexity of systems, processes, and human dynamics. Anderson and Ackerman Anderson further describe an educational and developmental process that will produce such officers and advocate for its use. Chapter 3 by Sandra Martinez, John Agoglia and Matthew Levinger finds that while existing PME structures are well-suited to developing narrow experts who function as junior officers, the system fails to cultivate the capabilities needed to lead in joint, interagency, or multinational complex environments. They describe a new organizational construct

for military education design, emphasizing reflection on past decisions to understand what these decisions imply regarding one's worldview. They argue that critical reflection on past decisions and the paradigms that underpin them should become an element of military education in the future. Lastly, Paul T. Bartone shows the 'hardiness' of the individual, which includes one's ability to physically and mentally perform under stress, is both measurable and correlates with cognitive adaptability in VUCA environments. He argues that hardiness can and should be a selection criterion for officer candidates, and recommends further research in this area.

Part 2 focuses on *The Changing Nature of Adult Education* and its associated *Drivers of Change*. The three chapters in this section explore changes in information technology, and the potential utility of new methods for adult education. In Chapter 5 Paulette Robinson begins this section by examining how technology has produced disruptive change in business and industry over the past two decades, and argues university systems are next. Describing several new learning tools, she argues that these changes have the potential to increase education options and opportunities in the years ahead. Chapter 6 by Elaine M. Raybourn discusses the concept of 'transmedia learning.' Defined as "a system…that reveals a…core experience through multiple media platforms," she argues that this system will revolutionize the education and learning processes. Drawing on the 2009 transformation model by John Gartska, Raybourn discusses the technology, people, process, and organization of transmedia learning; and shows how it can help meet current demands to transform educational processes in a non-linear and socially-adaptive manner. Finally, in Chapter 7, Shane Gallagher examines the transformation of education through neuroscience, cognition, and game design. Arguing that effective learning must be engaging, Gallagher draws lessons from the $18+ billion gaming industry where engaging and creatively adaptive interactions through video technology are already taking place. Gallagher argues that while additional research is needed in game design and learning measurement, applying educational rubrics either to existing games or new game design can produce adaptive and engaging learning activities that are relevant, authentic, contextually appropriate, and problem based.

The third section covers various *Perspectives on Joint Education*. The longest section in this volume, the authors examine the current state of Joint PME, the structural elements that have contributed to Joint PME institutions being slow to adapt, and offer recommendations on both how to address these problems as well as on how to use Joint PME to bring the military's disparate Services, governmental agencies,

and allied and partner nations together. In Chapter 8, Jerry West begins this section with an assessment of how well the current Joint PME system meets the needs of the U.S. Department of Defense. Chapter 9 by Cynthia A. Watson, Linton Wells II and Paulette Robinson, then focuses on how including research activities within the PME curriculum of institutions such as National Defense University can broaden an officer's experiential base and enhance their critical thinking skills. Chapter 10 from Joan Johnson-Freese examines the state of PME and finds it cast adrift. She points out that many transformation efforts are led by those who have little vision of the end state, and little understanding of the point from which they are beginning the journey. The result is therefore often failure. Johnson-Freese argues that PME institutions must adopt a faculty rank structure that parallels leading civilian universities, develop a strategy for hiring strong and diverse faculties, encourage faculty research to keep faculty members at the leading edge of their respective fields, and diligently guard academic freedom to ensure faculty can freely publish and debate contemporary issues with their peers in order to enhance the educational experience for their students. Chapter 11 by Theodore C. Hailes argues that the governing of Joint PME institutions is so archaic and slow to respond that they are precluding the institutions from meeting the needs of the Services and adapting to a rapidly changing strategic environment. Hailes argues that these governing processes must be changed and the institutions need to increase the content of their curriculums devoted to future studies (currently 7 percent). In Chapter 12, John R. Carter Jr. adds that there are untapped opportunities in advanced distance learning where many officers will receive the majority of their PME. Carter argues that new distance learning technologies, implemented on an episodic basis throughout an officer's career, and blended with in-residence opportunities, can pay significant positive dividends to the force. Finally, in Chapter 13, Ralph O. Doughty and Ralph M. Erwin examine the criticality of building interagency and multi-national partnerships through education. Using historical examples, they argue that Joint PME institutions need to be multi-national and interagency and need to incorporate experiential learning as well as academic instruction. In addition, disparate services, agencies and countries need to achieve acculturation with each other to enhance interoperability in conflict operations. They then describe several methods to achieve these goals.

The fourth section covers *International Attitudes* on education and leadership developed by some of the United States' principal partners. This section shows how some international allies are wrestling with a diverse set of challenges ranging from

poor execution of transformation management, difficulties in defining optimum leadership styles, and the difficulty of achieving full interoperability. Beginning with Chapter 14, Professor Julian Lindley-French, argues for the creation of a NATO-wide Comprehensive Defense Education (CDE) model which includes all knowledge, skills, and competencies to meet current and future strategic operational and command challenges. Based on analysis of recent NATO operations, Lindley-French concludes that "intellectual interoperability" is central to the alliance's ability to operate jointly. Implementation of CDE will require multiple changes in our education systems, including development of advanced learning architectures as well as bespoke courses conducted at NATO-wide schools. Model implementation will initially be costly, and like the defense of the alliance, will likely be too expensive for any one country to bear. To that end, he recommends the development and coordination of this effort to be driven by NATO's Allied Command Transformation. In Chapter 15, Professor Derrick J. Neal examines recent transformation initiatives within the United Kingdom's Ministry of Defence (MOD). Faced with severe budget cuts amidst the double-dip recession, the MOD moved to implement a new service model. Neal tests empirical evidence on this implementation against several theoretical models of leadership change management, and finds that unless the MOD addresses several elements including its people and organizational culture, then over 70 percent of such transformation initiatives, are bound for failure. Neal's analysis extends to educational institutions as well. Lastly, in Chapter 16, Peter Olsthorn and Joseph Soeters examine the dichotomy between two disparate visions of military leadership in the Netherlands: one visionary, directive, and strong; and the other decentralized and more personality based. The authors explore this dichotomy through the lens of Dutch combat experience in both the Bosnian and Afghanistani conflicts. From this they conclude that in modern complex warfare, a decentralized and less directive style of leadership is more effective. Termed "unobtrusive leadership," Olsthorn and Soeters argue that this form of command should be embedded in doctrine and leadership instruction among the more traditional leadership paradigms.

The fifth section covers *Enlisted Education and Other Concepts*. This section begins with a discussion of three recent presentations on enlisted education. Here, the organization and purpose of education of the enlisted force in the U.S. and UK is explained. This section includes two chapters that look at salient but different issues in PME. The first looks at the need to include greater interagency emphasis; the other recommends a path to take greater advantage of technology change within our educa-

tion processes. In Chapter 17, Elizabeth A. Yeomans and Jon W. Stull offer a way forward to give substance to the International Operations Response Framework (I-ORF) created under the auspices of the U.S. Secretary of State in the wake of the *Operation Iraqi Freedom* to enable an alliance-wide, whole-of-government approach to major crises. The authors show that recent progress with regard to the I-ORF has been limited to nomenclature. Yeomans and Stull then offer a path forward, via an Interagency Conflict Assessment Framework, that would embrace several lessons learned from the United Nations Office for Coordination of Humanitarian Affairs, and through new curricula, would create an organizational culture to enable the U.S. to help lead stability operations under a functional I-ORF in the future. The last paper, Chapter 18, broadly examines the theory and praxis of requirements for national security strategic leader education. Cathy Downes reviews the history of U.S. PME institutions and finds that while the labels of military education institutions have changed over time, the content of these schools' curricula has remained largely stagnant. Downes argues that the rate of exponential change in technology and national security issues has reached the point where education and preparation of future strategic leaders has become a truly "wicked problem." To address this, she recommends using Web 2.0-based technologies to produce holistic, learner-centric education that rebalances the PME enterprise, focuses on the strategic and executive demands of national security, creates a culture of valuing and rewarding national security educators, and leverages the combined potential of digital technology and the technical literacy of the next generation of learners. Collectively, these actions may enable the wicked problem of the development of future strategic leaders to be successfully addressed in the years to come.

The final chapter of the volume seeks to summarize these arguments and the International Transformation Chairs (ITX) Conference and Workshop on *Leader development for an Unpredictable and Complex World* held in Washington, D.C., on June 19-20, 2013, from which this book is derived. The overall theme of this publication and the workshop is "dealing with change" including technology change, strategic change, education change, information change, culture change, and changes in the nature of conflict and warfare. Analysis of this change led many contributors to conclude that existing military education curriculums and structures could better prepare future leaders for the challenges that lay ahead. The final chapter offers cautions regarding how change is implemented as improper change management will not succeed. In the end, Linton Wells II concludes that while research on educational

pedagogy is still needed, we know enough to begin making progress. NATO's Allied Command Transformation can lead in focusing on the derivation of concrete means to achieve superior education and training outcomes across the alliance, and that such an effort must be an alliance-wide endeavor with full participation by all. The book concludes by offering a set of recommendations for PME systems to meet the challenges the alliance will likely encounter in the future.

Meeting these challenges is, however, fundamentally a human endeavor. It is with the focus on the human nature of education that this volume now begins.

Notes

[1] Marcus Aurelius, *Meditations*, A New Translation, with an Introduction by Gregory Hays (New York: The Modern Library, 2003), 46.

[2] "Welcome to 2035…the Age of Surprise," *YouTube*, Center for Strategy and Technology, September 8, 2012, available at <www.youtube.com/watch?feature=player_embedded&v=9Xpu2QqLnHY#!>.

[3] As of the start of the 2011 academic year, 22 universities world-wide offered graduate degrees with future studies as the primary degree field. More than 80 more programs offer future studies as the secondary field in graduate degree programs. Among the universities offering these graduate programs include the University of Hawaii, University of Houston, MIT, Harvard, Oxford, and Stanford. A full list is available from the Acceleration Studies Foundation, *Foresight Graduate Programs – Global List, 2010*, available, as of February 21, 2013, at <www.accelerating.org/gradprograms.html>.

[4] Joseph A. Englebrecht, Robert L. Bivins, Patrick M. Condray, Merrily D. Fecteau, John P. Geis II, and Kevin C. Smith, *Alternative Futures for 2025: Security Planning to Avoid Surprise* (Maxwell AFB, AL: Air University Press, April 1996), 10-18; and Peter Schwartz, *The Art of the Long View: Planning for the Future in an Uncertain World* (New York, NY: Doubleday, May 1991), 31-170. In addition, a methodological primer in future studies is available from the *World Future Society*, available, as of February 21, 2013, at <www.wfs.org/methods>.

[5] Those who are now over 65 years of age read a newspaper on 70 percent of the days in 1996 and 60 percent today; those in their 20s read newspapers on less than a quarter of the days, and get much of their news via visual media and the Internet. Pew Research Center for the People & the Press, *News Audiences Increasingly Politicized: Choice of President Matters More in 2004*, June 8, 2004, available at <www.people-press.org/2004/06/08/news-audiences-increasingly-politicized/>.

[6] John Man, *The Gutenberg Revolution: The Story of a Genius that Changed the World* (London, UK: Headline Books, 2002); and "The Computer Re-shaped the News Business," *Communication Research Trends* 6, no. 1 (1985), 1-3. In late 1982, however, a new newspaper with electronic typeset and writing capability did come onto the U.S. publishing scene. Breaking new ground, *USA Today* was launched in the Washington, DC, market only on September 15, 1982.

[7] While the technology to create an answering machine was invented by Thomas Edison in 1878, the first commercial success of such a machine did not come until the 1980s. Only after the patent lawsuit launched by Kazuo Hashimoto and AT&T was resolved in 1982, did AT&T bring a commercially successful machine to market in 1984. See: U.S. Patent Number 4,616,110, available at <www.google.com/patents/US4616110>; and David Morton, "A Boom in the 1980s," *Recording History: The History of*

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Recording Technology, 2006, originally created by Rutgers University, available at <www.recording-history.org/HTML/answertech10.php>.

[8] The digital camera was invented in 1981, but it had not yet reached the marketplace.

[9] Sony's first video camera was introduced in 1981. See Sony's Homepage, available at <www.sony.net/SonyInfo/CorporateInfo/History/sonyhistory-f.html>. The author worked for the television industry, including at CBS News/WISC-TV, in the early 1980s as this transition was being made, and has first-hand knowledge of the transition that took place.

[10] The development of human insulin was first done by Eli Lilly in 1982 and made its way to the market shortly thereafter. Irl B. Hirsch and Jay S. Skyler, "The Management of Type 1 Diabetes," in *Diabetes and Carbohydrate Metabolism*, ed. Jack Leahy, updated November 2009, available at <www.endotext.org/diabetes/diabetes17/diabetesframe17.htm>.

[11] The stent was invented in 1988 and came into use shortly thereafter. Balloon angioplasty was available in the 1980s, which could open arteries for a time, but the stent was needed to keep them from collapsing later. See U. Sigwart, J. Puel, V. Mirkovitch, F. Joffre, and L. Kappenberger, "Intravascular stents to Prevent Occlusion and Restenosis after Transluminal Angioplasty," *New England Journal of Medicine* 316, no. 12 (March 1987), 701-706.

[12] Statins we not even discovered until 1988 and synthesis required additional developments. See Uwe Christians, Wolfgang Jacobsen, and Leslie C. Floren, "Metabolism and Drug Interactions of 3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase Inhibitors in Transplant Patients: Are the Statins Mechanistically Similar?" *Pharmacology and Therapeutics* 80, no. 1 (October 1988), 1-34; Jonathan A. Tobert, "Lovastatin and Beyond: The history of the HMG-CoA Reductase Inhibitors," *Nature Reviews Drug Discovery* 2, no. 7, (July 2003), 517-526.

[13] Paul A. Offit, *Vaccinated: One Man's Quest to Defeat the World's Deadliest Diseases* (New York: Harper Books, 2008), 99-197.

[14] "The Top 30 Innovations of the Last 30 Years," *The Nightly Business Report*, (Washington DC, Public Broadcasting System, February 19, 2009), compiled in conjunction with *Knowledge@Wharton*, available at <http://knowledge.wharton.upenn.edu/article.cfm?articleid=2163>.

[15] Matt Ridley, "Humans: Why they Triumphed," *The Wall Street Journal*, May 22, 2010, available at <http://online.wsj.com/article/SB10001424052748703691804575254533386933138.html>.

[16] John P. Geis II, Ted C. Hailes, Harry A. Foster, and Grant T. Hammond, *The Age of Surprise* (Center for Strategy and Technology: Maxwell AFB, AL), forthcoming.

[17] *The National Security Strategy* (White House: Washington, DC, May 2010), 1.

[18] While there are important underlying forces that were at work in the Arab Spring, social media played a major part in its timing. For a discourse on the forces underlying the uprising, see Lisa Anderson, "Demystifying the Arab Spring: Parsing the Differences Between Tunisia, Egypt, and Libya," *Foreign Policy* 90, no. 2 (June 2011), 2-7. For the role of social media, see Philip N. Howard and Muzammil M. Hussain, "The Role of Digital Media: The Upheavals in Egypt and Tunisia," *Journal of Democracy* 22, no. 3 (July 2011), 35-48.

[19] *World Economic Outlook Update: Gradual Upturn in Global Growth During 2013* (New York: International Monetary Fund, January 2013), available at <www.imf.org/external/pubs/ft/weo/2013/update/01/>; World Economic Outlook Database (New York: International Monetary Fund, October 2012), available at <www.imf.org/external/pubs/ft/weo/data/changes.htm>. The IMF projects that China and Hong Kong's combined GDP to be approximately $18.7 trillion in purchasing power parity. It simultaneously projects U.S. GDP to be approximately $18.7 trillion. However, China's growth rate is projected to

be faster than that of the U.S., resulting in the U.S. falling behind by 2017.

[20] Anecdotally, restrictions on travel to professional conferences among government employees in the United States is rapidly causing its science, technology, engineering, and teaching forces to all become non-current in their primary fields. This is having significant adverse impacts on research and education.

[21] Dan Vesset, Harry Morris, Gard Little, Lucinda Borovick, Susan Feldman, Matthew Eastwood, Benjamin Woo, Richard L. Villars, Jean S. Bozman, Carrl W. Olofson, Steve Conway, and Natalaya Yezhkova, *Market Analysis: Worldwide Big Data Technology and Services 2012-2015 Forecast*, Volume 1 (Framingham, MA: IDC Corporation, March 2012), 11. For trend data, see "Data, Data Everywhere," *The Economist*, February 25, 2010, available at <www.economist.com/node/15557443>.

[22] Peter Schwartz, *Inevitable Surprises: Thinking Ahead in a Time of Turbulence* (New York: Gotham Books, 2003), 8-15. Schwartz points out that two human traits, denial and defensiveness, often blind us to the real implications of global events unfolding before our eyes. The result is that most often, people fail to understand the magnitude of change that confronts them.

[23] "To Paris, U.S. Looks Like a 'Hyperpower,'" *The New York Times*, February 5, 1999, available at <www.nytimes.com/1999/02/05/news/05iht-france.t_0.html>.

[24] Some forecasts put the U.S. as far back as fifth place by the year 2100, behind India, China, Brazil, and the European Union. While such forecasts may be over-stated, several credible brokerage houses have issued reports on the comparative rise of several states, which will become powerful enough that the unipolar period of the 1990s and 2000s will come to an end. See: *BRICs and Beyond* (New York: Goldman Sachs Global Economics Group, 2007). While using the same BRIC acronym, Price Waterhouse Cooper adds a second "I" to their listing of rising powers, namely Indonesia, and forecasts India to approach the U.S. GDP in 2050. See *World in 2050: The BRICs and Beyond: Prospects, Challenges and Opportunities* (NY: Price Waterhouse Cooper, January 2013) available at <www.pwc.com/gx/en/world-2050/the-brics-and-beyond-prospects-challenges-and-opportunities.jhtml>.

[25] While social scientists do not agree on the specific merits of bipolar versus multi-polar systems, they do agree that these pose different challenges to the international community. For perspectives on these challenges, see: Kenneth N. Waltz, *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979), 162-176. For a different perspective, see Stephen M. Walt, "Alliance Formation and the Balance of World Power," *International Security* 9, no. 4 (1985), 3-43.

[26] Alan L. Porter, Nils C. Newman, Xiao-Yin Jin, David M. Johnson, J. David Roessner, *High Tech Indicators: Technology-based Competitiveness of 33 Nations – 2007 Report* (Atlanta, GA: Technology Policy and Assessment Center, Georgia Institute of Technology, January 22, 2008), available at <www.casted.org.cn/en/web.php?NewsID=4446>.

[27] "Climbing Mount Publishable: The Old Scientific Powers are Starting to Lose their Grip," *The Economist*, November 11, 2010.

[28] Matt Ridley, "Humans: Why They Triumphed," *The Wall Street Journal*, May 22, 2010, available at, <http://online.wsj.com/article/SB10001424052748703691804575254533386933138.html>.

[29] Emily Singer, "Biomedicine: Making Genome Sequencing Part of Clinical Care," *Technology Review*, March 8, 2011, available at <www.technologyreview.com/biomedicine/35068/>. In one recent test, University of Wisconsin researchers were able to save a 6-year old child who had already undergone over 100 operations on his digestive tract, by diagnosing a rare defect in one of his chromosomes. A stem-cell transplant cured him of the disease. Michael B. Miller, "How tall of a stack of paper would we need to print out an entire human genome?" *Division of Epidemiology and Community Health, University of Minnesota*, October 15, 2005, available at <http://bio4.us/biotrends/human_genome_height.html>.

[30] Interviews by author with leading biogenetic researchers at the Los Alamos National Laboratory.

[31] "Italy Readies Beam to Knock Out Pirate Engines: Electromagnetic Attack Overloads Voltage," *Defense News*, February 28, 2011, 11. The ability of pulsed microwave devices to fry electronics has been known for some time. See: John P. Geis II, *Directed Energy Weapons on the Battlefield: A New Vision for 2025* (Maxwell AFB, AL: Air University Press, April 2003). One need not destroy large numbers of power plants to disrupt electricity over large regions. Over 50,000,000 persons in the U.S. and Canada were left without electricity in 2003 due to a single tree branch coming in contact with a single power line, causing a cascading failure of the Northeast U.S. and Southeast Canada power grid.

[32] Jeanne Meserve, "Mouse Click Could Plunge City into Darkness, Experts Say," *CNN.com*, September 27, 2007, available at <http://articles.cnn.com/2007-09-27/us/power.at.risk_1_generator-experiment-cnn?_s=PM:US>; Mark Clayton, "Stealing US Business Secrets: Experts ID Two Huge Cyber 'Gangs' in China," *The Christian Science Monitor*, September 14, 2012, available at <www.csmonitor.com/USA/2012/0914/Stealing-US-business-secrets-Experts-ID-two-huge-cyber-gangs-in-China>.

[33] The most powerful computer in the world in 1983 was the Cray X-MP, which contained only 16 megabytes of internal information, and each processor was capable of approximately 40 megaflops. Additional memory was available at an additional cost. Today's "smart phone" processors operate in the gigahertz range and often contain 1000 times more memory than did the Cray computer of 1983. See *The Cray X-MP Series of Computer Systems* (Minneapolis, MN: Cray Corporation, 1985).

[34] These computations are based on the current market price of a Galaxy III phone of $49.99. As the price of this phone continues to decrease, the number used here continues to grow larger.

[35] John P. Geis II, Ted Hailes, and Grant T. Hammond, "Technology and the Comprehensive Approach: Part Problem, Part Solution," in *Capability Development in Support of Comprehensive Approaches: Transforming International Civil-Military Relations*, ed. Derrick J. Neal and Linton Wells II, 69-86 (Washington, DC: National Defense University Press, 2012).

[36] John P. Geis, II, Harry A. Foster, Ted Hailes, and Christopher J. Kinnan, *Blue Horizons III – The Age of Surprise: Implications of Exponential Technological Change on the United States Air Force in 2035*, forthcoming. See Blue Horizons Homepage, available at <http://csat.au.af.mil/blue_horizon/index.htm>.

[37] Ralph Langner and Perry Pederson, *Bound to Fail: Why Cyber Security Risk Cannot be "Managed" Away* (Washington, DC: Center for 21st Century Security and Intelligence, Brookings, Washington, DC, 2013).

[38] Jacqueline R. Henningsen, *CSAF Vector: Recapture Acquisition Excellence* (Washington, DC: U.S. Air Force, March 4, 2013), 22. Source is Unclassified/FOUO.

[39] Don M. Snider, "Jointness, Defense, Transformation, and the Need for a New Joint Warfare Profession," *Parameters* (Autumn 2003), 17.

[40] This is a systemic problem with the nature of the procedures governing PME content, and not a reflection on specific individuals within the military educational system.

[41] Geis, et.al., *Blue Horizons III*.

[42] Air Force Manual 36-2236, *Guidebook for Air Force Instructors* (Maxwell AFB, AL: Secretary of the Air Force, November 12, 2003), 39.

[43] Ibid.

[44] Donna Pawlowski and Mary Danielson, *Critical Thinking in the Basic Course: Are We Meeting the Needs of the Core, the Mission and the Students?*, ED 428 410 (Washington DC: U.S. Department of Education, 1998), 3.

[45] Geis, et.al, *Blue Horizons III*.

[46] Peter A. Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction* (Millbrae, CA: California Academic Press, 1990). More recent studies have confirmed Facione's findings. Willingham argues that critical thinking is dependent on domain knowledge, thus critical thinking about future environments must contain education on these environments. See Daniel T. Willingham, "Critical Thinking: Why Is It So Hard to Teach?" *American Educator* 109, no. 4 (Summer 2007), 8-19.

[47] Azriel Lorber, *Misguided Weapons: Technological Failure and Surprise on the Battlefield* (Washington, DC: Brassey's, 2002),1-243.

[48] Ernesto Londono, "Iraq, Afghan Wars Will Cost $4 Trillion to $6 Trillion, Harvard Study Says," *The Washington Post*, March 28, 2013, available at <http://articles.washingtonpost.com/2013-03-28/world/38097452_1_iraq-price-tag-first-gulf-war-veterans>.

Part One

The Human Dimension of Transformation

The core theme of the Conference's first panel, *The Human Dimension of Transformation*, is that developing strategic leaders cannot be reduced to just training in specific skills or competencies. Rather, attention needs to be focused on changing the mindsets or worldviews of individuals and the cultures of organizations. As the book's introduction clearly indicates, the security environment is changing: there are new domains (space and cyber), non-traditional enemies, a diffusion of technologies, and greater interdependencies. Too often focus is placed on the processes of transformation where a one-size-fits-all approach seeks to impose change from the top down. The presenters from this panel, which set the tone for the conference as a whole, emphasized leader development at the individual level, both to improve their ability to act at strategic levels and to change the cultures of their organizations.

In the first chapter, General George S. Casey draws on his experiences as commander of the Multi National Force—Iraq (MNF-Iraq) from 2004-07, providing prescriptive advice for future senior leaders. To operate effectively in a VUCA world (Volatile, Uncertain, Complex, Ambiguous), Casey advises strategic leaders to first of all "get the strategy right." This means figuring out just what your goals are, and articulating these clearly for subordinates and partners. He admits this is easier said than done. But getting the strategy right definitely requires good communications with more senior leaders who are setting overall policy. In Casey's experience as MNF-Iraq Commander, this meant frequent meetings and discussion with senior leaders back in Washington, D.C. As operations become more complex, Casey also underscores the importance of leaders working to establish "unity of effort" amongst diverse partners with multiple perspectives. This also is easier said than done, but Casey recommends that leaders can achieve greater unity by spending more time developing and maintaining personal relationships with partners as well as local leaders. Regular assessments and reviews are also needed in order to keep the strategy on-track, while making course corrections along the way. Finally, Casey reminds senior leaders to care for themselves, by taking time for rest, exercise, reading and reflection. He closes with another reminder that future conflicts will require more agile and adaptive senior leaders.

The next chapters in this section pick up the challenge of how to develop leaders who have the mental perspective and capacity to function as the adaptive and

agile strategic leaders that Casey envisions. A core theme for both Chapters 2 and 3 is that developing strategic leaders cannot be reduced to just skills or competencies training. Rather, we need to focus more attention on the more fundamental task of changing mindsets or world-views.

The two chapters by Dean Anderson and Linda Ackerman Anderson, and Sandra M. Martínez, John Agoglia, and Matthew Levinger, both applied Cook-Greuter's and Torbert's nine-stage theory of adult development to describe the process of transformational development of leaders. Both sets of authors emphasized the need for transformational change at the organizational level, beginning with the need for individual leaders to develop new mindsets that provide them with the capacity to see the world more broadly. Traditional military culture and command-and-control systems are not conducive to such broad, strategic mindsets, and do not support the kind of transformational growth that is needed to get there.

Dean Anderson and Linda Ackerman Anderson, the founders and CEO and Vice President, respectively, of the transformational change consulting firm, *Being First*, Inc., assert that the military (and many other organizations) tend to focus on content in addressing change, while neglecting people and process. But all three need attention in order to facilitate both organizational and individual transformation and growth. More open collaborative environments in which employees (and students) have greater input and ownership over processes and outcomes, and can exercise choice, are also needed to stimulate the kind of conscious awareness that can help people move to more complex, strategic modes of thinking.

Anderson and Ackerman Anderson refer to "vertical development" (transformation) to connote movement up to a higher-order, qualitatively different stage of thinking and perceiving. Such vertical development is contrasted with horizontal development, which entails expanding content knowledge and expertise without any change to the basic manner or process of understanding.

Martínez, a former Transformation Chair at the Army War College and President of Fénix Leadership & Development, LLC, and her co-authors, Colonel (Ret.) John Agoglia, the former Director of the Counterinsurgency Training Center-Afghanistan, and Dr. Matthew Levinger, Director of the National Security Studies Program at George Washington University's Elliott School of International Affairs, argue that the Joint Professional Military Education and Professional Military Education systems must be transformed to better cultivate the mindset and leadership capabilities of a "Pluralist" and "Strategist," using the language of adult develop-

ment, in the education of military officers. They narrate two case studies based on experiences of the International Security Assistance Force in Afghanistan to illustrate the levels of adaptability, self-awareness, strategic thinking, learning, and collaborative capacity required of leaders and organizations to successfully meet the security challenges of the complex international environment.

Adapting the adult development framework in the design of a decision cycle, Martínez, Agoglia, and Levinger create a model they call SODAR (Sense, Orient, Decide, Act, Reflect) to illustrate how "Strategist" level thinking and acting more effectively deals with complexity and thus supports effective collective action. This reconceptualization of the familiar OODA (Observe, Orient, Decide, Act) Loop replaces "Observe" with the more inclusive term "Sense" and adds a "Reflect" phase. The emphasis on reflection, or critically reviewing one's decisions and actions and examining one's assumptions, is considered especially important for developmental growth.

Paul T. Bartone's chapter reports on a research project aimed at identifying the factors that encourage development of adaptability in military leaders. The research follows a cohort of West Point cadets over a seven year period, from entry into the academy to three years after graduation. Results show that psychological hardiness, composed of commitment, control and challenge, is linked to later adaptability as a young officer. Specifically, the sense of control appears to facilitate the kind of developmental growth that results in more complex and adaptive stances toward the world. The research provides important clues for how training environments should be designed to maximize developmental growth.

The central theme of this panel is that leader development is not just about content learning or skills acquisition. Rather, it is about helping people advance to new ways of thinking about themselves and the world, new mindsets. This is surely not easy, and it's not the kind of thing that can be trained. It is difficult in part because transforming to a new mindset, whether for an individual or an organization, necessarily entails giving up the old familiar one. How do we help our students make the developmental leap to more complex, strategic mindsets?

The answer will likely involve designing educational environments that present students with experiences and scenarios that challenge their current assumptions and world-views, forcing them to re-examine their current perspectives. Perhaps this can be done using new technologies and gaming techniques that allow for more realistic scenarios and immersion experiences, as are discussed in other sections of this book. Another key appears to be providing such experiences within a support-

ive organizational environment in which students have greater choice and control over their learning, where one size does not fit all, and where failure is valued as an opportunity to learn and improve.

Chapter 1

Volatile, Uncertain, Complex, and Ambiguous: Leadership Lessons from Iraq

General George W. Casey, U.S.A. (Ret.)

In early 2013, I was asked to address students at University of North Carolina's Kenan-Flagler Business School on the topic of *Leading in a VUCA World*. I must admit that after hanging up with the Executive Director, I had to "Google" VUCA because, though I knew it was an acronym and had something to do with complexity and uncertainty, I couldn't remember what all the letters stood for. Ten seconds later it was clear why—it was a term coined by the U.S. Army War College in the late 1990s to describe what the world would be like after the collapse of the Soviet Union.

In reality, VUCA has never been more relevant. Today we live, compete, and lead in a Volatile, Uncertain, Complex, and Ambiguous world more than at any time in our recent history. Leading in this environment—in both the public and private sectors—is tough business. It is tougher if you allow yourself to be cowed by the volatility, the uncertainty, the complexity, and the ambiguity that we all face daily.

It seems hard to believe that the U.S. Armed Forces have been at war for almost a dozen years since we were attacked on September 11, 2001. During that period, we have transformed a very good 20th century military into a very good 21st century military while we were fighting two wars. We have learned a lot in the process, but we are not finished adapting.

We live in a VUCA world where technology's continuous march ties us closer and closer together, and non-state actors have access to instruments of catastrophic destruction. We are in a period of constant and fundamental change that will require agile, adaptive leaders who have the vision to see opportunities in volatile and ambiguous situations, the courage to act in the face of complexity and uncertainty, and the character and resilience to make tough calls and bounce back from unexpected

setbacks. Our leaders must also focus their intellectual and emotional energies in the areas that will have the highest payoff for their organizations.

That is the purpose of this paper, which is drawn from the last chapter of my book, *Strategic Reflections: Operation* Iraqi Freedom*, July 2004–February 2007,*[1] to discuss eight high-payoff areas where senior leaders should focus their efforts and energy to lead effectively in a VUCA world.

Insights for Leaders

I have thought a great deal about my experiences in Iraq. I believe that some of the insights that I developed during that time can benefit future military leaders as they are thrust into senior leadership positions in new and different missions in this era of persistent conflict. As always, some lessons are new; others are old ones relearned. I began to share these insights with the Army general officer corps and joint flag officers attending CAPSTONE[2] shortly after I assumed the position of Army Chief of Staff.

Perhaps the greatest lesson I took from my time in Iraq was that senior leaders are most effective when they stay at the right level and focus their time and intellectual energy in the areas that will yield the highest payoff for their organizations. That sounds easy, but it is not because the things with the highest payoff are the hardest to do—for example, getting the strategy right in very uncertain environments; instilling the strategy in the organization; driving organizational change; influencing organizational culture; sustaining momentum; and influencing key partners not under your direct control. By their nature, these things are complex and difficult and do not lend themselves to simple solutions. They require the time, energy, and experience of the senior leaders in the organization to be done effectively. What follows are some insights in those areas for future leaders.

Developing Vision and Strategy

The question that I asked most in Iraq, and, interestingly, the one I asked most as Army Chief of Staff, is, "What are we really trying to accomplish?" I found that this question was hard to answer clearly and succinctly in the complex and uncertain environment of Iraq. Yet it was imperative that I clearly articulated to my subordinates what it was I wanted them to do if we were going to be successful. A fuzzy idea coming out of the four-star headquarters did not get clearer as it was transmitted through the chain of command. Accordingly, we spent a lot of time and intellectual effort sharpening our

views of what we wanted to accomplish in Iraq and for major operations, for example, Fallujah, elections, the western Euphrates campaign, and Baghdad.

The Army's primary doctrinal manual, Field Manual 3-0, *Operations*, offers a construct to assist commanders in framing solutions to difficult problems—understand, visualize, describe, direct—and, although we did not think of what we did in those terms at the time, that is what Ambassador John Negroponte and I did initially as we grappled with the mission.[3] We both felt that we needed to establish a clear vision for what we were to accomplish in Iraq, so we began discussing it before we left Washington. The consultations that we conducted in Washington, the Red Team assessment, and the on-the-ground consultations in Iraq in the early days after our arrival were all part of building our *understanding* of the mission. As our understanding grew, we began to sharpen our thinking on what we wanted to accomplish and how we wanted to accomplish it— we began *visualizing* the endstate and design for the mission. In interactive discussions with Washington, the Red Team, the Iraqis, and our staffs, we began *describing* how we saw the mission unfolding and received their insights. In dealing with the complexity and uncertainty of Iraq, I found that building a level of understanding sufficient to visualize the problem and to describe the solution effectively was an iterative process—that my thinking got sharper over time. I found that the sharper the disagreements, the greater the clarity we achieved.

We gave ourselves 30 days to produce a joint mission statement and campaign plan, the means by which we would *direct* the tasks required to accomplish the mission. We felt strongly that we owed our subordinates as much clarity as possible to shape a common path to success. I found it particularly important to be clear on the nature of the war we were fighting: counterinsurgency; and the nature of the enemy: primarily Sunni Arab rejectionists; and to clearly spell out the mission and the risks. I felt that the 30-day timeframe was important because I had seen too many draft campaign plans that were continuously being polished and never published. In complex situations, commanders must force themselves to get clarity in their own minds and transmit that clarity to their subordinates in writing. I found that writing things out caused me to think more clearly about issues, so I personally wrote several of the key segments of the first campaign plan (for example, mission, intent, and risks).

We built a deliberate assessment process into the campaign plan because we knew the plan would require continuous adjustment. As part of this process, we forced ourselves to challenge our assumptions and ask ourselves hard questions about the efficacy of the plan. The assessments proved useful in adapting our efforts to chang-

ing realities. I also found there was constant tension between retaining focus on the broader campaign and adapting to short-term changes in the environment. One of the ways that we used to mitigate this tension was to publish annual campaign action plans that allowed us to retain the focus on our broad counterinsurgency campaign while dealing with shorter term issues. The annual action plans also proved helpful in maintaining continuity through the transition of subordinate units and staffs.

I am convinced that one of the hardest things for leaders to do in complex and uncertain environments is to get clarity in their minds on what it is they want their subordinates to accomplish to achieve success. Because it is so hard, it takes the full involvement and commitment of the senior leader to accomplish it successfully.

Creating Unity of Effort

Another difficult challenge for senior leaders is to create unity of effort among organizations whose cooperation is necessary for their success, but that are not under their direct control. The National Security Presidential Directive issued in May of 2004 established the division of labor between the Department's of State and Defense for the mission and directed "the closest cooperation and mutual support" between the Ambassador and the U.S. Central Command (CENTCOM) commander.[4] United Nations Security Council Resolution (UNSCR) 1546 described my relationship with the soon-to-be sovereign government of Iraq as a "security partnership."[5] If we were to successfully prosecute a counterinsurgency campaign inside a sovereign country, I was going to have to rely heavily on the Embassy and Iraqi government to deliver the political, economic, communications, and, in the case of the Iraqis, security effects to support coalition efforts. The keys to my success were outside of my direct control, so I was forced to create the required unity of effort with successive Ambassadors, Iraqi prime ministers, and cabinet ministers.

Ambassador Negroponte and I recognized this early on and agreed before we left Washington on the One Team/One Mission concept—the Embassy and Multi-National Forces-Iraq (MNF-I) would work as one team to accomplish the U.S. mission. Because of different organizational cultures and different reporting and budget chains, implementing the concept took the direct intervention of the Ambassador and me. Conscious of the need to bring the missions together intellectually, we established a Red Team composed of key leaders from both organizations to tell us what they thought about the mission and the threat. Putting a key advisor to the Ambassador as the leader of the effort and giving him a strong military deputy allowed us to

get a balanced output from the group. The Red Team report led to the joint mission statement by the Ambassador and me that was a key step in establishing One Mission. The essence of the statement was dutifully incorporated into the campaign plan so that it penetrated MNF-I. The Ambassadors and I issued joint mission statements three times during my time in Iraq as the mission evolved.

Building the "One Team" was equally challenging. The old adage that "Defense is from Mars and State is from Venus" just scratches the surface of the cultural differences between two professional communities. Given human nature, major institutional and cultural differences do not disappear in a war zone, and working through them requires the continuous involvement of senior leaders. The Ambassadors and I went to great lengths to bring the two organizations together and keep them moving in the same direction to accomplish our national goals in Iraq. We used the Red Team concept frequently to keep us intellectually aligned. We collocated our offices, traveled together, and consulted regularly and visibly to ensure our subordinates saw us linked together. We integrated our headquarters with the Embassy to provide the physical proximity necessary for effective coordination. Sustaining the One Team/ One Mission concept between the Embassy and MNF-I took a lot of the personal time and effort of the Ambassadors and me, particularly with the annual rotation of staffs and two changes of Ambassador.

Over our initial weeks on the ground, the Ambassador and I wrestled with the implications of Iraqi sovereignty on our efforts. The United States had returned sovereignty to the Interim Iraqi Government on June 28, 2004, and the Coalition Provisional Authority had appointed Ayad Allawi as the interim prime minister. We recognized that unless we shared our vision and plans with the Iraqi leadership, we would not only generate unproductive friction between us, but also be unable to leverage the influence of the government in support of our efforts. While the Iraqi Government had publicly accepted MNF-I presence, the modalities of coordinating our operations had to be worked out. We set out to establish them in a way that respected Iraqi sovereignty but that retained our freedom of action. Sovereignty meant that the Iraqis had a vote and that things would not necessarily get done the way we wanted when we wanted. The Ambassador and I would have to balance Washington's directives and timelines with the needs and desires of the sovereign Iraqi government. It was a delicate balancing act, and one that required our almost constant attention. I cannot overstate the benefit we got from spending the time to establish strong personal relations with Iraqi leaders. Strong personal relationships can help bridge the frictions that will always be encountered.

My staff and I found that we spent a lot of time integrating the efforts of the Embassy, three Iraqi governments, and MNF-I. There were frustrating days when I asked myself whether this was the best use of our time. In the end, I saw it as my headquarters' responsibility to work with the Embassy and the Iraqi government to deliver the political, economic, and communications effects that would make MNC-I security operations successful and sustainable. Just generating these effects in a postconflict state, let alone integrating them at the required time, was very hard work. In the end, I believe that creating unity of effort among diverse entities beyond your control is, and will continue to be, one of the key tasks that will require the attention of senior leaders in 21st century warfare.

Continuous Assessment and Adaptation

In long missions such as Operation *Iraqi Freedom* where leaders are intensely immersed in difficult issues daily, it is easy to lose your perspective on the larger mission. I found that we had to create opportunities to get leadership to take a step back and look broadly at the mission. We built an assessment process into the campaign plan to do this, but it took some time to get it to the point where it was producing meaningful insights.

We began with a monthly assessment called the Commander's Assessment and Synchronization Board. It was designed to help us see how the staff was accomplishing the objectives assigned to them in the campaign plan so that we could make short-term adjustments. It was highly detailed. It quickly became clear to us that what we were measuring did not change that much in a month and that the staff was expending a great deal of energy developing the product, so we went to campaign assessments every 2 months.

The greatest challenge we found was determining what to measure. Staffs will tend to measure what they can, not necessarily what you need. It was not until I forced the staff to answer three questions about each of the effects we were tracking that we began getting good value out of our assessment sessions. The three questions were: What are we trying to accomplish? What will tell us if we are accomplishing it? How do we measure that?

Initially, the assessments were produced by the MNF-I staff and attended by the Embassy and MNF-I leadership. Over time, the Embassy staff got more and more involved until the assessment became a joint, and better, product. We would periodically invite representatives from the Joint Staff to attend to facilitate transparency in sharing information.

We also instituted semiannual assessments called Campaign Progress Reviews to give us a broader perspective. These reviews looked back over the past 6 to 12 months and

offered recommendations for the next 12 months. They were essential to driving long-range planning. As it is a constant struggle for senior leaders to get their subordinates to share their doubts with them, I left the development of this assessment to the staff and the writing to the gifted colonels in our plans and assessment shop. I found the anonymity of the staff process produced greater candor. I found this process and product most helpful in seeing broad changes required in the mission and in developing our annual action plans. We used these assessments to adapt the mission over time. For example, the need to get better visibility on and performance from Iraqi security forces that led to the development of the transition team and partnership programs came from the December 2004 assessment. A shift in the nature of the most significant threat from former regime elements to Islamic extremists that took place in the spring and summer of 2005 and led to the western Euphrates and Tal Afar operations later that year was identified in the June 2005 assessment. The significant shift in the nature of the conflict that took place after the Samarra bombing in 2006 and that led to an increased focus on Baghdad and operations to lessen sectarian tensions later that year came from the June 2006 assessment.

There were three other forums that also enhanced our ability to adapt. The first was the monthly intelligence update where our intelligence officer reviewed intelligence trends with the staff and me. I found this forum most useful for putting the insights and thoughts that I had accumulated over the month into perspective. It allowed me to better assess the impact of individual incidents in a broader context. The second was the monthly commanders' conference where I sought to balance the MNF-I view of the mission with the views of the division and corps commanders. While I generally visited each of the divisions once or twice a month, having them share their views in a common forum proved invaluable. The third was the use of an almost continuous Red Team process to focus the attention of experienced individuals on hard topics outside of the normal staff process. I often asked the intelligence agencies to take the lead and usually included individuals from the British embassy and intelligence services on the Red Teams. I found this process especially helpful in looking ahead (for example, I asked teams to tell me the likely outcome of elections and the implications for the mission). I found Red Teaming an excellent way to get fresh ideas and to avoid the "group think" that can often come from the staff process.

Leaders at every level must see themselves and see their enemy, and recognize that the action-reaction-counteraction cycle of war requires constant assessment and adaptation. At the theater level, I tried to focus on adjustments that would have a high payoff at my level.

Influencing Organizational Culture

At the strategic level, leaders need to be attuned not only to the culture of the country they are operating in, but also to the impacts that the cultures of their own organizations can have on their ability to accomplish their missions. I entered Iraq with views about aspects of Army and Marine Corps organizational cultures that I felt could hamper our ability to accomplish the mission if we did not address them. First, both Services are very well trained in conducting conventional war, as they demonstrated during the ground war. I knew that they would be very good at applying force against their enemies. Unfortunately, success in counterinsurgency operations requires much more than the effective application of force. I knew that it would be tough to change this mindset, but in an environment where distinguishing the enemy was very difficult and civilian casualties bred additional enemies, we would have to do it. Second, I worried that our "can do" attitude would make it harder for us to get the Iraqis trained and responsible for their own security—the precondition of our ultimate success. I saw the impact of this attitude myself in Bosnia and Kosovo. In complex environments, it is very difficult to get even simple things done, so the natural tendency is to do them yourself. I had to find a way to get our troops to focus on Iraqi solutions without damaging the can-do spirit that sets U.S. Service members apart, and that we would need to succeed.

To do this, I realized that I was attempting to change deeply embedded Service culture and that I would have to change the mindset of the force. I greatly underestimated how long this would take. We began by clearly stating in our campaign plan mission statement that we were conducting counterinsurgency operations to send the message to the force that we were doing something different than they had been trained for. I reinforced this in my discussions with leaders during their campaign plan backbriefs.

But that was hardly enough, and shortly thereafter we took measures to improve our understanding and application of counterinsurgency doctrine. We had MNF-I staff take a historical look at successful and unsuccessful counterinsurgency practices in the 20th century, and disseminated their work to the force and to Service trainers who were preparing the next rotation.

Our efforts continued with the implementation of the transition team and partnership concepts in early 2005. For the first time since Vietnam, we were asking conventional forces to be involved in the training of indigenous forces during a war—another significant cultural change. The establishment of Phoenix Academy to train all of the incoming transition team members, use of Special Forces to train conventional

forces in the art of working with indigenous forces, and development of the "flat-assed rules" to communicate the new mindset to every member of the command played key roles in driving cultural change in our forces. This was a start, but we slowly began to realize that changing the organizational culture embedded in the Services for decades was not going to happen overnight.

In the summer of 2005, I chartered a survey of how we were applying counterinsurgency doctrine across the force. The study found that, while we generally knew the doctrine, it was being applied unevenly across the command, and the application was very dependent on the local commander's knowledge and initiative. It recommended that we establish a COIN Academy to augment the training that they were getting at home station to ensure that entering commanders started with a common view of how to conduct counterinsurgency operations in Iraq. We conducted the first class in November of 2005 and began to see an appreciable change in the conduct of our operations throughout 2006 as all company, battalion, and brigade commanders began to rotate through the weeklong course before they began their tours in Iraq. Continuing change was facilitated with the publishing of the joint Army–Marine Corps counterinsurgency manual in December 2006, an essential element of driving cultural change within the Services.

In the end, I found that as our lessons learned were continuously incorporated into Service training programs and more soldiers came back for second and third tours, I saw continuous improvement in the preparedness of the forces to conduct counterinsurgency operations and work with the Iraqi forces. Recognizing the impacts of organizational culture comes from the experience of growing up in the culture. Recognizing the potential impacts in new situations requires a broader perspective and is intuitive work. It is the work of senior leaders.

Civil-Military Interaction

Civil-military interaction around matters of policy and strategy is inherently challenging. The issues are complex, the stakes are high, and the backgrounds of the people involved can vary widely. The interaction only gets more difficult in war, and is particularly difficult with leaders from other cultures. Developing plans and strategies, reporting, managing expectations, and developing and providing military advice to civilian leaders all require the senior leader's full attention.

My previous experience at the policy level in Washington taught me not to expect written direction from civilian leaders, and that proved the case in Iraq. We developed

the initial campaign plan based upon my verbal discussions with the President, Secretary of Defense, and Chairman, the direction provided in the President's Army War College speech,[6] UNSCR 1546 and its attached letters, written guidance from the US-CENTCOM commander, and my interactions on the ground in Iraq with Iraqi and coalition leaders. The Ambassador and I developed our strategy and campaign plan to accomplish the endstate that we created from this guidance and presented it for approval by the Secretary of Defense and President in August of 2004.

Throughout the mission, I had interaction with Washington several times a week usually in the form of secure conference calls and video teleconferences, most with the Secretary of Defense, the Chairman of the Joint Chiefs, and the USCENTCOM commander, and weekly in a National Security Council meeting chaired by the President. These sessions were designed to keep Washington up to date on the situation in Iraq. In them, I would usually present a short update and highlight upcoming events to avoid surprises. I would then answer questions. Periodically, about every 4 to 6 months, I would return to Washington for face-to-face discussions. This was essential because it is difficult to have substantive discussions on a video teleconference that includes a dozen Cabinet-level leaders with staff often operating from multiple sites. It is also much easier to get a sense of how your presentation is being received in person. The Secretary of Defense and the Chairman would also visit several times a year, presenting the best opportunity for discussion and interaction. I had almost daily interaction with General John P. Abizaid by secure telephone and face-to-face contact several times a month during his visits to Iraq or my visits to his headquarters in Qatar. His broader perspective was invaluable in seeing the Iraq mission in the context of the larger war and region.

It is difficult for subordinates to communicate to their superiors the depth of the complexity that they are dealing with. It is no different at the strategic level. I worked hard to provide a balanced view of what was occurring in Iraq—the bad with the good. I realized early on that, as I had the direct interactions with civilian leaders, I had the best understanding of what they needed, so I found that I spent a lot of my time and intellectual energy preparing properly balanced presentations for Washington. I felt that it was very important to convey the right balance in the presentations to avoid creating false expectations. I was not uniformly successful. I found it difficult to keep the discussions at a level that would provide civilian leaders with the insights they required to develop the strategies and policies essential for success. Even at the strategic level, leaders can get captivated by tactical actions.

Setting common expectations is another difficult but essential task. In any military campaign plan, it is important to set objectives and make judgments on when they will be accomplished. As senior military leaders, we owe our civilian leaders our best views on how long things will take. When we offer our views, we need to be clear that in war things will change and assumptions will prove invalid. I would often conclude a briefing in which I made key projections with a slide entitled "Bad Things That Could Happen" to make this point. When I was conveying timelines, I was very conscious that precious little in Iraq got accomplished right on time, so I would often convey projections to Washington "seasonally"—for example, we would complete a certain task by "the summer of 2006"—to give them a perspective on time without getting unnecessarily specific.

A key expectation to resolve is how to measure progress at the strategic level. Going into Iraq, we made a conscious decision not to use enemy casualties—body count—to measure strategic progress. I believe that was the right decision, but the unintended consequence was that as our casualties were reported and the enemy's were not. It appeared to some domestic audiences that the enemy had the upper hand—which was not at all true. Over time, I began selectively reporting enemy losses to give a more balanced picture of the situation to our home audiences.

We looked at a variety of ways to measure progress at the strategic level, primarily focusing on significant events and milestones that, linked together, would demonstrate steady progress toward our ultimate endstate (for example, elimination of terrorist safe havens, success in major military operations, successful elections, completion of the UN timeline, seating of governments, meeting developmental gates for the Iraqi Security Forces, transferring security responsibility to Iraqis). As these major events took months and even years to accomplish, I found that they did not compete with the daily reports of casualties and violence as a means of expressing our progress. While I disagreed with using daily casualty and violence levels as *the* measures of our *strategic* progress (they were measures of the enemy's tactical capacity and a measure of our overall progress), in retrospect, I believe that, over time, casualties and violence became the de facto measure of strategic progress in Iraq, and I should have forced a more in-depth discussion with my civilian leadership about their strategic expectations.

I had civil-military interaction with three Iraqi prime ministers and three different sets of cabinet ministers. I treated the Iraqi leaders with the respect due civilian political leaders, and worked to provide them with the key elements of military advice necessary

for their decisionmaking. The list I provided Iraqi Prime Minister Nouri al-Maliki when I departed was a compilation of the key areas I had come to believe that civilian and military leaders should discuss in preparing for military operations. As with any difficult issue, I found that productive civil-military interaction is an iterative process that requires a continuous dialogue among civil-military principals until a common understanding is reached. I found that this common understanding is heightened by clearly sharpening differences of opinion rather than papering over them to gain consensus.

In the latter months of 2006 and early 2007, I was consumed with civil-military interaction with civilian leaders in both Baghdad and Washington. As we finalized our plan to secure Baghdad, we worked with Iraqi leadership to cement Iraqi political support for the mission and gain their commitment to the plan's success. The Ambassador and I had long daily sessions with the prime minister and his security ministers, pounding out the details of the plan and ensuring our forces would have freedom of action once they were committed. Once the plan was approved just before Christmas, we turned our attention to the execution of the plan, a phase that required fairly constant interaction with Iraqi leaders that continued through my departure in February.

Simultaneously, we were participating in the Washington review of Iraq policy and strategy that also concluded just before Christmas 2006. The review involved numerous long sessions by video teleconference and had an implementation phase for the announcement and execution of the new policy that continued through January. The transition between Secretary Donald Rumsfeld and Secretary Robert M. Gates in November and December 2007 further complicated the civil-military situation.

Someone told me once that the decisionmaking process at the national level is "idiosyncratic at best." That is an important lesson for future leaders when providing military advice. Do not look for the Military Decision Making Process at the national level. When it comes to providing military advice, yours is only one part of the President's decision calculus. Provide your military advice with your rationale and the courage of your convictions and, as with any military decision, stand by to execute the decision.

Political-Military Integration

Political and military actions must be mutually reinforcing, particularly when operating inside other sovereign countries. With Prime Minister al-Maliki, I used the analogy of the two of us rowing a boat. If I pulled on the "military" oar and he did not pull on the "political" oar, the boat went around in circles. If he pulled on the "political" oar and I did not pull on the "military" oar, the boat went around in circles. If

we both pulled together, the boat went forward. I had mixed success with three Iraqi prime ministers in "rowing the boat."

We had our best success integrating political and military actions with the Coalition Provisional Authority–appointed Interim Iraqi Government. We learned early on that Iraqi political support was essential to having the time to bring our military operations to successful conclusion. In the Najaf operations in 2004, careful melding of the political and military efforts yielded the IIG its first success. In the Fallujah operations later that year, actions by the Prime Minister to disband the Fallujah police force (the terrorists had put on police uniforms) and declare a 24-hour curfew greatly facilitated our tactical operations, and the government's public support of the operation gave us the time we needed to complete the mission. In both of those operations, Embassy leadership was kept abreast of the planning, to include participation, with Iraqi Security Forces leadership in a rehearsal of the operational concept. In providing security for the January 2005 elections, the imposition of last-minute curfews and driving bans by the interior minister at our request helped disrupt the insurgents' ability to affect the elections. I found that it was not necessary to share tactical details, but giving political and diplomatic leaders a broad idea of what to expect greatly facilitated their ability to support the operation.

Political-military interaction was less productive with both of the elected Iraqi governments that followed. I can only surmise that the greater demand for sovereignty by both subsequent governments affected their ability and willingness to take political risk to support Iraqi and coalition military operations. We had some success with the Iraqi Transitional Government in winning support for the Tal Afar operation in September 2005 and with the agreement the Iraqi Government made with Anbar provincial leaders in early 2006 to bring Anbaris into the security forces, to provide money for reconstruction in Anbar, and to release some Anbar prisoners. We were not able to gain their support for weapons and militia bans that would have facilitated our operations to secure Baghdad.

I go into some detail about the political-military integration with the constitutionally elected government of Prime Minister al-Maliki. The desire of the government for greater say in security actions and a differing view of the threat created frictions that took some months to get through. That said, the Prime Minister's Army Day speech in January of 2007 is a good example of political leaders building public support for military action.[7]

I believe our efforts in 2006 suffered, at least in part, because of the disagreement between the Prime Minister and the Coalition on the nature of the threat and the lack of a political timeline to drive Iraqi actions to resolve their differences over the division of political and economic power—the issues at the heart of the sectarian violence. Whether it was possible to reach agreement on either of these issues at that time is, I believe, an open question. They were decisions for the sovereign government of Iraq, and our government could only attempt to influence them. We could not impose U.S. solutions. The integration of political-military efforts is always difficult, but it is even more so when operating with another sovereign government. It will remain essential to attaining our national objectives in 21st-century conflict.

Momentum and Transitions

In extended campaigns, transitions and their accompanying loss of momentum are inevitable. This was the case in Iraq as we confronted numerous transitions at every level within MNF-I, the U.S. Embassy, and the Iraqi government. Sustaining momentum is not easy, but it is essential to long-term success.

I found that determining whether we had momentum was more art than science. In long operations, things unfold so slowly that it is often hard to tell whether you are moving at all. Our maxim was, "If you're not moving forward, you're moving backward." Leaders need to develop a way to "feel" momentum. A structured assessment process helps, but I found that I got my best sense from my face-to-face meetings with subordinate commanders and Iraqi leaders on their own turf. I learned to judge whether they were comfortable or uncomfortable answering my questions about progress.

Momentum at the theater level generally comes from big events such as successful elections, the passage of major legislation, decisive military victories, and major agreements. The initial United Nations timeline offered the opportunity in 2005 to sustain momentum through four major events—the initial elections in January 2005, development of the constitution in August, constitutional referendum in October, and elections for the constitutional government in December. To get there, in the absence of political events, we generated momentum through the military successes in Najaf, Samarra, and Fallujah in 2004 and by energizing the development of the Iraqi security forces. Unfortunately, the protracted government formation processes, limited government experience of most of the appointed ministers, and turbulence of three government transitions in two years severely limited our ability to sustain political momentum to complement our military efforts.

On the military side, the terrorists and insurgents learned not to mass against us after our successes in Najaf, Fallujah, Tal Afar, and the western Euphrates. So while we maintained momentum and pressure on the terrorists at the tactical level, we did so through daily small unit actions, and it took time for those successes to gain strategic significance. The exception was the killing of Abu Musab al-Zarqawi in June of 2006, a tactical action that had strategic impact.

In an attempt to generate political momentum in 2006, the Ambassador and I developed a series of benchmarks—Iraqi political and security actions that, when taken, would begin to resolve the fundamental tensions over the sharing of political and economic power. By assigning these events a completion date, we hoped to string together a series of political successes that would continue moving the country in a positive direction. By linking these with military operations, we hoped to break the sectarian stalemate that was strangling the county. Unfortunately, the idea never gained the committed support of the newly elected Iraqi leaders.

On the military side, the semiannual and annual transitions of units and staffs affected our momentum, but, largely because of the significant effort made by the Services to prepare their forces, the substantial interaction that took place between units before the new units arrived, and our in-theater training and integration efforts, we were able to somewhat mitigate the impact. I began visiting all newly arrived brigades in early 2005 within 30 days of their arrival to give them a theater overview and to ensure that the leadership clearly understood their mission. With the development of the Phoenix Academy in early 2005 and the COIN Academy in November 2005, I spoke to every class, providing an overview similar to what I provided the brigades. In order to maintain momentum, I felt that it was important incoming leaders heard my expectations directly from me.

I was generally pleased with the unit transition process, but usually I found during my post-transition visits that there was something major that got dropped. For example, the troops that came into an area after a major battle usually did not have the same intensity and commitment to the reconstruction effort as those that had won the victory, and new troops generally seemed to believe that the war began with their arrival. It was human nature at work. The post-transition visits helped with maintaining continuity and momentum.

Maintaining momentum through political and military transitions is another area that is more art than science, and an area of important effort for senior leaders.

Sustaining Yourself

One of the toughest challenges for senior leaders in deployed environments is to sustain their physical, mental, and emotional fitness at levels that allow them to deal with the complex challenges confronting them. I watched four corps's worth of senior leaders come through Iraq. I encouraged each of them to establish a regimen where they got sufficient rest, exercise, and intellectual stimulation so that they could provide their subordinates the direction they needed for success in Iraq. I told them that to sustain themselves for the duration of the mission, they needed to find quality time every day to *REST*: read-exercise-sleep-think. I had found this a useful formula for myself during my time in Bosnia and began to share it with my subordinate leaders as they entered Kosovo in 2000. I practiced it myself in Iraq.

Read. Sometimes the hardest thing to come by after you have been deployed for a while is a fresh idea. Staffs, especially when there are frequent rotations, tend to fall into repeating "facts" based on shared conventional wisdom. I strongly encouraged leaders to find quiet time daily to read something besides their email, their inbox, or intelligence as a way to stimulate new insights. I read every night before I went to sleep and found that it had the added benefit of slowing a mind that was spinning with the events of the day down to the point I could get to sleep. I read a wide variety of books, from T.E. Lawrence's *Seven Pillars of Wisdom* to David McCullough's *1776* to Stanley Karnow's *Vietnam: A History*. All stimulated useful insights.

Exercise. I strongly encouraged my senior leaders to get on an exercise regimen as soon as they could after their transition process was complete. I made the time to exercise four or five times a week and found it a great way not only to avoid fatigue but also to burn off stress and frustration, of which there was plenty. It was also quiet time alone to think.

Sleep. My experience with U.S. officers and noncommissioned officers is that they tend to push themselves too hard and think that they can get by on less sleep than they really need. In long operations, leaders have to force themselves to get the rest that they need to be most effective. The issues they will be confronted with require them to be at their best.

Think. I found that I needed private time to think, daily and periodically, to keep things straight in my own mind and to be able to shape clear guidance for the staff. I organized my day so that every morning I had 30 minutes to review the intelligence and 30 minutes to think about the previous day and organize my thoughts for the days ahead. Once the day began, there was precious little time for reflection. After a

few months on the ground, I began taking a day off every month. I would stay at my quarters, exercise, read, and think about the longer term. Because I found that forcing myself to write things out caused me to sharpen my personal thinking on issues, I would often write something at the end of the day to capture my thinking. After a year, I found that 1 day a month was not enough, and I began taking a half-day off every week. I encouraged my subordinate leaders to do the same.

Over time, I learned to watch myself to know when I was not at my best. If I got to the point where I did not feel like I was capable of providing creative inputs to the challenges we were dealing with, I looked for the opportunity to get a short break. I also made it a point to take at least a week off outside of Iraq every year and to ensure that all of my subordinates took advantage of Rest and Relaxation leave. Preserving your physical, mental, and emotional strength is critical to the ability to lead at the strategic level.

Operation *Iraqi Freedom* is part of the larger story of the United States of America adapting to the security challenges thrust on us by the al–Qaeda attacks of September 11, 2001. The world we live in is in a period of continuous and fundamental change as technology's continuous march ties us closer and closer together and puts the instruments of catastrophic destruction in the hands of nonstate actors. As a result, war in the 21st century will not be like the conventional war that I spent 30 years of a 40-year career training to fight. It will also not be just like Iraq or Afghanistan. At the tactical level, it will be as uncertain and as difficult and as brutal as war has always been. I believe, however, that the complexities of the international security environment will only increase at the operational and strategic levels, bringing greater challenges for senior leaders. We will require agile, adaptive senior leaders to handle the challenges of war in the second decade of the 21st century. It is my hope that this book will contribute to the development of those leaders.

Notes

[1] George W. Casey, Jr., *Strategic Reflections: Operation* Iraqi Freedom*, July 2004-February 2007* (Washington, DC: NDU Press, October 2012).

[2] Located on historic Fort Lesley J. McNair, National Defense University, Washington, DC, CAPSTONE is an intensive three-week course consisting of seminars, case studies, informal discussions, visits to key US military commands within the continental United States. See <http://capstone.dodlive.mil/>.

[3] Field Manual 3-0, *Operations* (Washington, DC: Department of the Army, February 27, 2008), Chapter 5, available at <downloads.army.mil/fm3-0/FM3-0.pdf>.

[4] National Security Presidential Directive (NSPD) 36, *United States Government Operations in Iraq*

(Washington, DC: The White House, May 11, 2004), 2, available at <www.fas.org/irp/offdocs/nspd/nspd051104.pdf>.

[5] *United Nations Security Council Resolution 1546*, S/RES/1546 (2004), Adopted by the Security Council at its 4987th meeting, June 8, 2004, available at <http://daccess-ods.un.org/access.nsf/Get?Open&DS=S/RES/1546%20(2004)&Lang=E&Area=UNDOC>.

[6] George W. Bush, speech to the U.S. Army War College, Carlisle, PA, May 24, 2004, available at <www.nytimes.com/2004/05/24/politics/25PTEX-FULL.html?pagewanted=all>.

[7] See Mark Kukis, "Maliki's Last Stand?" *Time*, January 5, 2007, available at <www.time.com/time/printout/0,8816,1574410,00.html>.

Chapter 2

Leadership Breakthrough: Meeting the Transformational Challenges of 21ˢᵗ Century Security Environment

Dean Anderson and Linda Ackerman Anderson

The global security environment is at a strategic turning point that demands a new type of military leadership and a new way of thinking about transformation to be successful in meeting the challenges of the 21ˢᵗ century. With the changing geopolitical dynamics and greater demand for presence and readiness in the Asia-Pacific and Middle Eastern regions, there is tremendous pressure to achieve our military aims while being increasingly constrained fiscally. This set of circumstances provides a direct incentive and non-negotiable requirement for all military forces—and leadership—to transform.

Both the Chairman of the Joint Chiefs of Staff and the Supreme Allied Commander of Allied Command Transformation of the North Atlantic Treaty Organization have called for globally integrated operations and interoperability, greater agility and versatility, collaborative relationships across Forces and with Allies and partners, technical advancements, and leveraged shared resources. At the same time, there is a need to reduce costs and increase organizational efficiencies and resilience. These are the right strategies; however, having military leaders prepared to perform well in these new ways of operating, when they require leadership that is so different from historical leadership and organizational practices, will require advanced and sustained development, starting now. It is one thing to understand intellectually what is needed and why; it is quite another to actually be able to do it effectively, in real-time. A center stone of succeeding at these imperatives is having a realistic and time-tested leadership development process that will deliver the right capabilities and mindsets for these new challenges. Even more, these imperatives require an evolution from traditional leadership to change leadership, in particular—Conscious Change Leadership.

Traditional command-and-control modalities, while historically appropriate, will not suffice as the sole approach in the complex, rapidly-changing circumstances of the post-Afghanistan and post-Iraq reality. Leadership must evolve to become more "co-creative"—thinking big picture, working openly across boundaries, being agile and flexible, being open to influence, and sharing information and resources—with integration and alignment to common objectives. It is not that we need to negate or leave behind command-and-control; we need to evolve it by expanding leadership mindsets and practices to include new ways of thinking and behaving that fit with what is now required to meet our 21st century challenges. Given that most military leaders have grown up within the traditional command-and-control framework, and have been rewarded for excelling in its modality, the current call to action requires nothing less than a fundamental transformation of leadership mindset, behavior, and skill.

What does transformation really mean? We use the word transformation quite freely in military contexts these days, but there seems to be little understanding or agreement about what it is, how it differs from other types of change, what it requires of leaders, resources, and planning, and how to design it for sustainable outcomes. It is our experience that many leaders use the word, even name departments or branches by it, but do not actually engage in it. We need a common understanding not only of what transformation is, but how to lead it, design it and implement it successfully. This is the breakthrough being called for, the Rosetta Stone that unlocks our path to a successful future. This chapter will begin by clarifying the three different types of change occurring in the military, focusing specifically on transformation and what it requires of leaders. Then it will describe the leadership breakthrough that must occur for the necessary transformation in military leadership, systems, culture, and operating practices. The chapter will proceed to introduce an approach to leading transformation, developed and proven in many settings over the past thirty years: in Fortune 500 companies, government agencies, and global Non-Governmental Organizations. This approach, entitled Conscious Change Leadership, applies an integrated System for Catalyzing Breakthrough, which will be briefly introduced and demonstrated as applied to transforming the U.S. military to meet the challenges now faced.

Three Critical Focus Areas in Leading Change

All organizational change requires leadership attention to three critical focus areas: content, people, and process (see Figure 1). *Content* includes the hard, tangible subject of the change effort, such as strategy, structure, processes, gover-

nance, and technology. *People* includes preempting and attending to the inevitable human dynamics, including building readiness, capability, buy-in, and engaging communications. *Process* refers to the planning, design, and implementation of the change process, including governance, action planning, integration across efforts, and course correcting.

Figure 1. Critical Focus Areas of Leading Change

Content of Change
The organizational focus of the change (structure, strategy, business process, technology, culture, product or service)

People in Change
Handling the human dynamics of change: people's mindsets, commitment to change; emotional reactions, behavior, engagement, relationships, politics; cultural dynamics impacting the change

Process of Change
The way in which change is planned, designed, and implemented; adjusting to how it unfolds; its A-Z roadmap, governance, integration strategy, and course corrections

Like a three-legged stool, organizational change succeeds only to the degree leaders put adequate attention to all three legs—content, people, and process. The challenge is that leaders focus mostly on content solutions, and under-attend to the required engagement of their people and the impacts on those who must make the change happen. They seldom *consciously* design their change processes to build stakeholder commitment to the outcome, include the required fluidity to make necessary adjustments and course corrections along the way, or provide clear decision making across ranks that promotes people with pertinent skills, information, and line of sight to issues to make quick and necessary real-time decisions. Leaders can approve content solutions and then dictate their implementation to staff when the change is developmental or transitional, but this top-down approach impairs the success of transformation. Com-

mand-and-control leaders have focused largely on requiring the right solution and then mandating or delegating putting it in place with little emotional engagement of the people who must make it a reality. It is important to understand why this approach will not work in the face of complex transformation.

Understanding the Types of Change: One Size Does Not Fit All

Three different types of change are occurring in organizations of all types today, including the military: developmental, transitional, and transformational (Figure 2). Understanding the distinctions between these types is critical because each requires *different* leadership mindsets and behaviors, different change strategies and approaches, a different level of integration, and different change process methodologies to guide their design and execution. Good change leadership starts with knowing what type of change you are leading so you know what you must do to lead it effectively.

Figure 2. Three Types of Change

Developmental Change

Improvement of what is; new state is a prescribed enhancement of the old state.

Transitional Change

Old State — Transition State — New State

Design and implementation of a desired new state that solves an old state problem; requires management of the transition process to dismantle the old state while putting in place the new state; managed timetable.

Transformational Change

Birth — Growth — Success Plateau — Wake-up Calls — Chaos — Death or Mindset Shifts — RE-EMERGENCE

Market requirements force fundamental changes in strategy, operations, and worldview: (1) New state is unknown—it emerges from visioning, trial and error discovery, and learnings; (2) New state requires fundamental shift in mindset, organizing principles, behavior, and/or culture, as well as organizational changes, all designed to support new business directions. Critical mass of organization must operate from new mindset and behavior for transformation to succeed and new business model or direction to be sustained.

Developmental change is the incremental improvement of current strategies, structures, systems, processes, or technology (content), while *transitional change* is the dismantling of existing strategies, structures, systems, processes, or technology, and the simultaneous creation of new ones that better fit current needs or solve known problems. In transitional change, you have the ability to pre-determine your content solution before engaging in the implementation of it. Having a tangible direction reduces the human dynamic and simplifies process planning. However, both types require individual behavior change and capability development (people focus), with transitional change requiring more because it puts in place a new state, rather than simply improving an old state. From the people perspective, additional training, communications, coaching, and role clarification can suffice to support developmental changes. In transitional change, there is often more need to attend to emotional dynamics as well because the requirement to operate in a new state often triggers stakeholder confusion, attachment, and anxiety. This requires greater attention to managing resistance through two-way communications and stakeholder engagement. In both types, project management methodologies are adequate to manage the process of change, and change management tools are often adequate to manage the people components to minimize resistance.

Top-down, command-and-control mandates can work in developmental changes, and even in many transitional changes, as the human dynamics are relatively mild and any required behavior changes are generally focused on learning and applying new skills that are not fundamentally different than what were pertinent in the old state. However, in highly complex or emotionally burdensome transitional changes, strict command-and-control with little stakeholder communication or engagement often limits staff's true understanding, commitment, and ownership of the change.

Organization transformation is an entirely different endeavor. It is by far the most complex type of organizational change occurring today, and the only type that can potentially deliver a substantial breakthrough in military practices to meet current challenges. The security environment demands that we transform, but we are the least equipped to actually lead this type of change successfully.

The essence of transformation is three-fold: First, *the magnitude of content change is profound, requiring a new paradigm for how to operate*. This makes the determination of future state content solutions complex and challenging, often demanding fundamentally different design principles (interoperability is a good example). Second, *the organization must begin its change process before it is clear about exactly where it needs to end*

up. A general direction or compelling vision is known at the start, but the outcomes, specific future state, and the change process are figured out as part of the transformational journey; the process is emergent. This requires leaders and staff to be flexible and agile to look for and adapt to new information as it arises, generating and implementing new solutions in real time. This makes the transformation process non-linear and at times, volatile and chaotic. Finally, *a shift in leadership mindset and behavior, and organizational culture, are essential drivers of the transformation*. This leadership transformation is required to even see optimal content solutions and to design a change process that is flexible and agile enough to deliver them, let alone sustain new solutions over time and realize their full benefit on the ground.

In transformation, because the outcomes required are radically different from how people and the organization currently operate, creating new solutions is dependent on leaders making this shift in their paradigm, not just making incremental adjustments to the current state. They may have systems to access new information, but if they interpret it only through their existing worldviews, they will miss what is being called for to succeed in their new reality. Making a shift in leaders' perspectives so they can interpret new information appropriately and accurately is essential to them leading effectively.

Since their organizations cannot wait for proven solutions before changing and adapting, leaders and staff must figure things out as they go, both in terms of what the new state needs to be and how to perform in it successfully. Critical input may come from any level or function in the organization. Rapid course correction is essential, as is sharing new information openly. This means collaboration, empowerment, and shared decision making across the hierarchy are essential. This set of factors is challenging for command-and-control leaders, as not having clear answers, going outside their stove-pipe, making quick adjustments, and calling on staff for critical input are generally not in their comfort zone. It is, however, the reality of leading transformation. Mastering these new dynamics is a requirement of succeeding in this new paradigm.

Given these circumstances, the human dynamics during transformation are much more significant and will need to be accounted for and managed as part of the change strategy and process. Since people are not given specific, tangible direction from the start, and are required to think things through collectively and influence upward, there is inherently more fear, doubt, and resistance in transformation. Greater confusion, stress, and chaos comes with the territory.

In traditional organizations, most leaders just focus on content and neglect these human dynamics. They decide the content solutions, then mandate their implementa-

tion to others, and expect staff to step in line and follow direction. But in transformation, where the world has become very uncertain, change-by-mandate does not work. Therein lies the reason why 60-70 percent of all transformational change efforts fail.[1] Leaders focus on content solutions, and neglect attention to the human dynamics and evolving mindsets (theirs and others). The leaders' mindsets must shift in how they lead change. Staff mindsets must shift in how they participate in change.

First of all, leaders need input about the best solutions from all levels of the organization affected. When staff is accustomed to being told what to do, they can become anxious, even suspicious when asked for their best thinking or required to make more strategic decisions on their own. Even when solutions have been determined, people do not know immediately how to operate, individually or collectively, in the new ways. Training, learning, and reinforcement are essential. Support and encouragement are key. When things are not immediately effective, leaders may think they have a "staff problem," when in actuality, the problem resides in these leaders not understanding the requirements of transformation and not having made the shift in their mindset and style to lead it differently. Most reactions are a reflection of how the change is being led, and not a reflection of staff not being on board.

In our 21st century security environment, leaders must take on more of a coaching role, where a primary objective is developing those below them to think more strategically and operate more collaboratively, supporting out-of-the box—even contrarian—thinking to produce more innovative solutions. This can be a challenge for today's officers who have been rewarded and promoted for their traditional authoritative command-and-control style.

The leadership breakthrough required is to see and understand human dynamics at a deeper level, and to master designing a transformational change process so it generates the best solutions and accounts for the natural human dynamics triggered by a march into an unknown reality. The process must engage staff in ways that generate real commitment, readiness, and capability to succeed in the new state, as it emerges. This breakthrough from traditional command-and-control leadership to a more co-creative, engaging, process-oriented leadership style is critical to transformation succeeding.

So how do you design a new reality that is currently unknown? The key is using design principles to shape the context for figuring it out. New military directives name many of these principles: agility, cross-boundary teamwork, interoperability, cooperation, leveraged resources, and networked communications. The change process needs to

assess what about the old state military strategy and establishment needs to be changed to enact these principles. But equally so, the change process also needs to represent these principles itself. It needs to be consciously and intentionally designed to reflect them. The transformational process must be designed to be agile and able to quickly be course corrected as new information arises. It must invite cross-boundary engagement, horizontally across forces, partners, and Allies, and vertically across the hierarchy. It must include regular and open communications not impaired by political dynamics or historic concerns like "shoot the messenger of bad news." Transformational processes must foster empowerment and shared decision-making. But most importantly, trans-formational change strategies must call leaders to think out-of-the-box, with elevated perspectives and worldviews so they can see the solutions and change process design required by the complexity they face.

The advantage of the change process modeling the new principles is essential to another requirement of transformation: changing the culture. Old cultural norms and ways of working and responding to the environment will keep the old state in place. In transformation, even if you can get the new content solutions installed, they will not be utilized well or fully integrated and sustained until the culture changes to support them. The culture must change along with the new systems, structures, processes, or technology. Without culture change, desired outcomes never materialize. It would be like moving the deck chairs around on the Titanic: nice new structure, but completely inadequate to what is required to solve the challenge at hand.

The same content design principles shape new cultural norms—engagement of all ranks; collaborating across departments, military services, and private-public sectors; sharing information and decision authority (without fear of repercussion), rapid course correction, smart information generation, great teamwork. Culture is the most potent collective make-or-break factor in transformation. Installing new content is easy. Trans-forming culture and mindset are the real challenges in transformation. Changing both needs to be integrated into every relevant aspect of a transformational strategy.

The good news is that many military leaders are seeing the new principles. During a recent workshop with a military organization whose senior officers were forecasting security challenges 20 to 50 years into the future, the officers were asked to identify the principles that would generate the solutions to the risks they faced. Their answers were:

- Global mindset
- Cross-boundary collaboration

- Present time adjustments to emergent circumstances
- Networking manpower
- Seeing into the future
- Thinking out-of-the-box
- Sharing power.

These leaders were clear about what was needed, as they rightly should have been. Their list did not feature traditional military mindsets, design principles, or ways of implementing change. Instead, they outlined the required shift in mindset and leadership perspectives and capabilities.

These officers were then asked if the principles they identified as requirements for success in their future were the foundation of their current leadership mindsets, behaviors and style, and their organization's culture. The answer was a resounding, "No." Most of them immediately saw that they needed to engage in a transformation to shift their own mindsets and behaviors, and the culture of their organization. They did not have to be convinced of that; their own assessment of their future through this perspective made it evident.

The inherent challenge for military organizations is that most (if not all) require deep transformational change of individual mindset, behavior and skill, and collective systems and culture, yet the current worldviews of most leaders do not allow them to see the people and change process dynamics required to succeed. Leaders consistently apply developmental and transitional change strategies to transformational challenges, which never work. Senior leaders assume they "know" what is required and how to do it, but in actuality, they do not. The bottom line is that leaders must become students of transformation, and develop the mindsets and skills of Conscious Change Leadership. The key question is, "How do we wake up leaders and the military establishment to these requirements?" If we don't, we fail.

A New Type of Leader

Our central message is that military leaders must evolve themselves—as people and as leaders—to meet our 21st century transformational challenges. It is one thing to see strategically what we need to do to be able to immediately address emergent and novel threats in diverse theaters, but it is a completely different thing to actually operate from the mindset that delivers these outcomes. Having a transformational mindset is the force-multiplier for developing these capabilities. Military organizations must be-

come proactive in developing transformational leaders using proven approaches.

Well-documented research in adult development informs us that people live and operate at different levels of awareness, or consciousness, meaning that they have different, observable mindsets and behavior patterns that increase in complexity as they advance in development. To advance, leaders must become *conscious* change leaders. By conscious, we mean more self-aware, more cognizant of their own mindsets, perspectives, and worldviews. By change, we mean being leaders not only of the current state, but of the required transformational changes to the current reality that are needed to ensure continued success.

Conscious change leaders see human and change process dynamics that traditional leaders miss, and they know how to manage them. They have this capability because they have developed themselves to a level of awareness that enables them to see what others cannot. To make this point clear, we will introduce three related concepts: Self-Mastery, Conscious Change Leader Accountabilities, and Vertical Development.

SELF-MASTERY AND THE INFLUENCE OF MINDSET

The Self Mastery Model (Figure 3) describes a fundamental human dynamic that is most often not seen, understood, or effectively applied by most leaders. That dynamic is that *mindset is causative*, meaning that people's beliefs and worldviews influence their perception, their interpretation of data and events, their ways of behaving, and ultimately their performance and outcomes. The understanding that "mindset is causative" is the foundation of Conscious Change Leadership.

Figure 3. Self Mastery Model
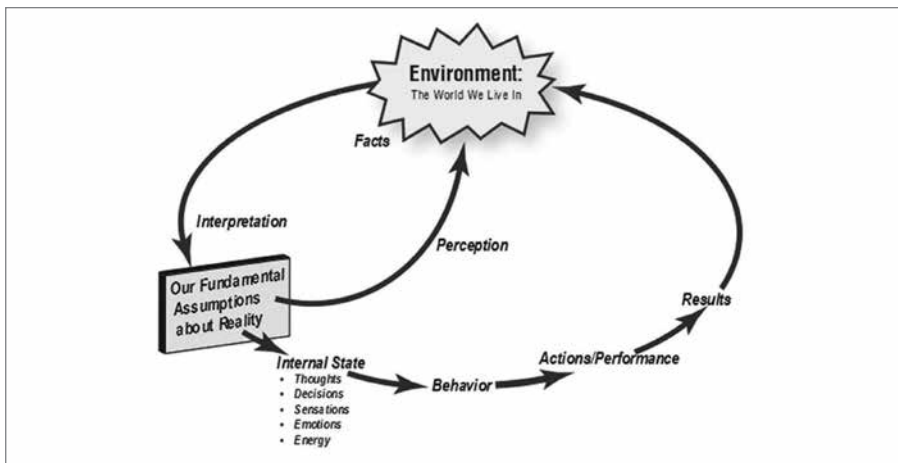
Humans interpret the facts we see in our environment based on our individual mindsets—our fundamental assumptions about reality, including our beliefs, values, and mental models. For example, if we believed that the world was flat (as people once did), then when a ship went out of sight on the horizon, we would believe that it fell off the edge of the earth. We would interpret the data to fit our fundamental assumptions about reality, and each data set of seeing such a phenomenon would reinforce our certainty that the world was flat. In order to break through to a more accurate and effective interface with reality, we have to transform our mindset to see new possibilities.

To continue the story of the Self Mastery Model, our mindset's fundamental assumptions determine our inner state, including our thoughts, emotions and decisions. Believing the world is flat, we get alarmed and fearful when a ship carrying important cargo gets very small on the horizon as it approaches the edge. Our tense internal state then determines our behavior. When we are in a fear-based state, including frustration, anger, or doubt, we either fight, flee, or freeze. Our behavior reflects our internal state. Our behavior then influences our actions and level of performance. Generally speaking, when in fear, we tend to under-perform as the fear disrupts our confidence, concentration and focus, all requirements of optimal performance. There are exceptions, however, as in those extraordinary high-pressure situations where fear can actually increase attention and focus through the release of stress hormones like adrenalin and epinephrine. But in normal situations, fear causes us to under-perform, which leads to sub-optimal results. The net effect is that our results reflect our mindsets. When the environment presents challenges that must be met from a more advanced perspective, like we face in the current military context, our mindset must evolve if we hope to produce the best results. Optimal performance is always a product of operating from an optimal state of mind.

This principle is true not just at the individual level, but also at the organizational level. Culture is the collective mindset of the organization. Mindset is to an individual as culture is to an organization. As the organization's mindset, culture is the pattern of widely shared assumptions (often unconscious), beliefs, and values that form the basis of people's ways of being, relating and working, and the organization's interaction with its environment. Culture is the principle of "mindset is causative" played out at scale. As noted, for an organization to meet the challenges of its environment, its culture must evolve just as the mindsets of its leaders and staff must also evolve.

What makes conscious change leaders so effective as compared to traditional leaders is that they understand this fact. Consequently, they attend to theirs and oth-

ers' mindsets and the organization's culture, just as they attend to individual behavior and skills, and the organization's systems, structures, processes, and technology, all in the context of what is required to transform. This is both relevant and critical in the military context.

CONSCIOUS CHANGE LEADER ACCOUNTABILITIES

For transformation to succeed, it requires conscious change leaders at the helm because they see and are accountable for attending to all critical areas of transformation. The Conscious Change Leader Accountability Model (Figure 4) depicts these accountabilities.

Figure 4. Conscious Change Leader Accountability Model
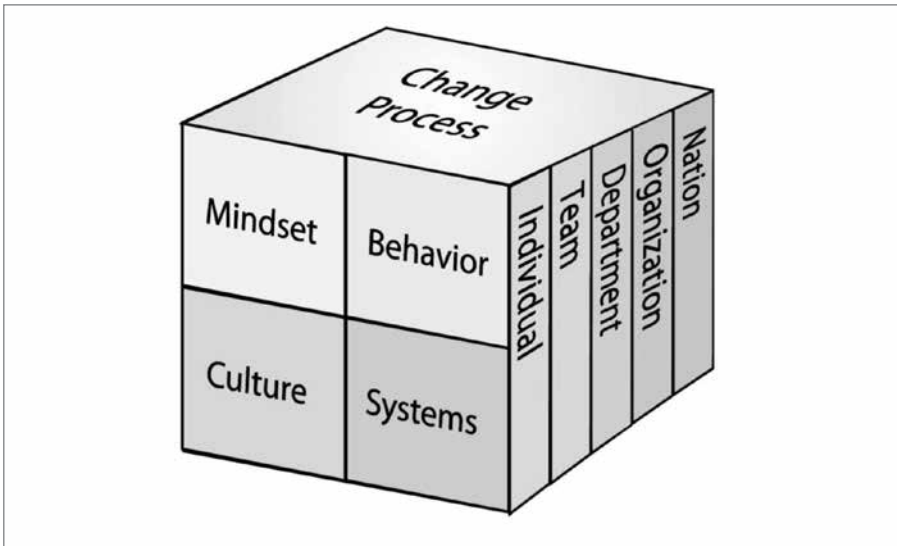
We draw this model from Ken Wilber's work on Integral Theory.[2] Wilber is the world's preeminent living philosopher on the workings of human consciousness. Simply stated, the military environment (or any environment for that matter) is comprised of *individuals* and *collectives* (teams, departments, organizations, partners). Each of these has an *internal* and an *external* reality. The inner domain of individuals is mindset, including beliefs, values, worldviews, emotional reactions, etc. The outer domain of individuals is observable—their behavior, skills, actions.

The inner domain of the collective—the organization—is culture, while the outer domain includes its systems, structures, technology (i.e., content). Teams, departments, organizations, and nations all have both "internal" cultural aspects and external "systems" that make them what they are.

In developmental and transitional change, leaders can focus on the external aspects of individual behavior and skill and organizational structures, systems, work processes, or technology, and be successful. But in transformation, leaders must address all four quadrants of mindset, behavior, culture, and systems, across all *levels* of the organization. The levels include individuals, teams, departments, organizations, nations, and the world. Leaders must *consciously* design their change processes to include actions that move each area in the positive direction required to deliver intended results.

This is a lot to attend to and keep organized. Conscious change leaders use a change process methodology fit for transformation for this purpose. Project management methods and tools are useful to organize and manage the detailed tactics of change plans, but insufficient to consciously plan a strategic change process that addresses all four quadrants and all the levels of organization. Project management approaches may suffice for developmental and transitional change, but not for transformation because they do not address the strategic design and course correction of the change process or the human dynamics that are so prevalent. Traditional leaders do not see this limitation, and with their content focus, often use project management to control implementation without ever developing an adequate change strategy. This reinforces their neglect of the critical aspects of transformation: transforming mindset and culture, and being able to navigate rapid course corrections as the new state emerges over time.

A different type of guidance system is required for transformation. We have spent the last thirty years developing such a change process methodology, called *The Change Leader's Roadmap*™ (CLR) (Figure 5). The CLR has nine phases, each divided into Activities, and subsequently divided for ease of use into a total of 77 Tasks. Each Task is supported by deliverables and resources, including Info Sheets, Work Steps, Change Tools and Worksheets, Process Questions, Likely Problems, and relevant Articles. The CLR includes over 2000 pages of resources to support change leaders to strategically—and consciously—design their transformational change processes, and execute implementation with the required attention to content, people, and the change process.

Figure 5. The Change Leader's Roadmap
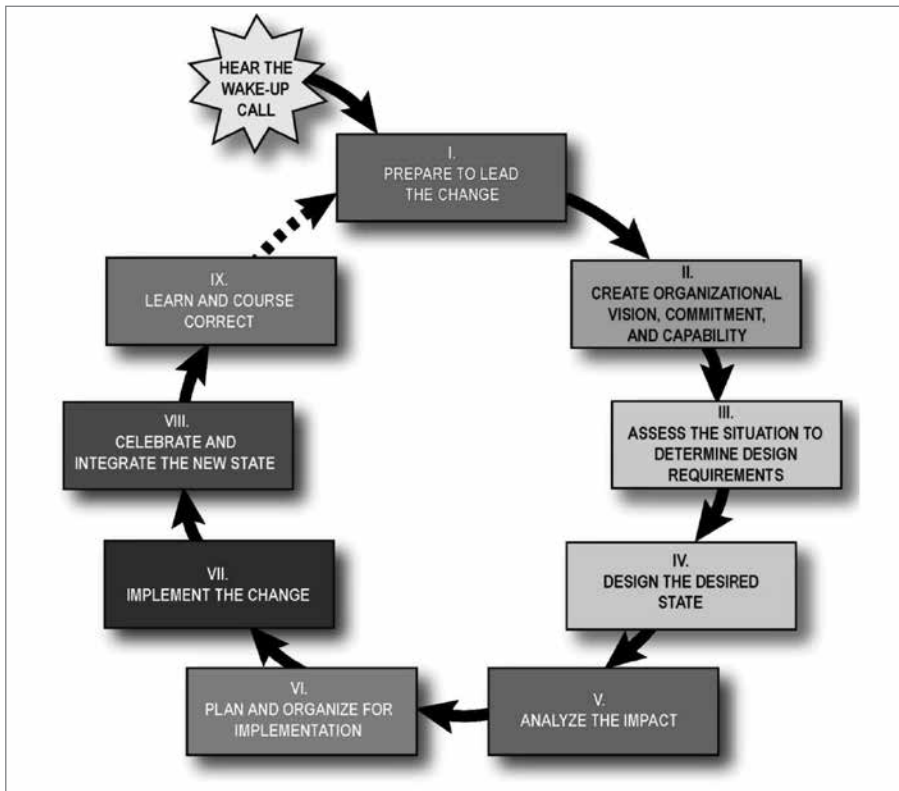
The CLR is not a lock-step, linear, cookbook methodology, but rather, a "thinking discipline" or navigation system. Skilled leaders use as little of it as required for each change effort they apply it to, but enough to ensure results. This is critical for two reasons: change consumes critical resources and no two change efforts are alike. Developing leaders so they can see which of the 77 Tasks are critical to their change effort is key. In other words, the more "conscious" they are of the human and change process dynamics at play, the more effective they are at choosing the right tasks for any particular change effort. Further description of *The Change Leader's Roadmap* is outside the scope of this article.[3]

Vertical Development

Individuals learn, grow, and develop over time, just as teams, departments, organizations, and societies do. Whereas much of that growth is incremental, sometimes

it is truly transformational. Learning and development happens in two primary ways: intentional and unintentional. Intentional development occurs when an individual, team or organization consciously engages in a developmental path. They proactively seek out education, experience, and coaching with structured practices to apply what they learn. Unintentional development occurs unconsciously. It happens as we simply go about our lives, even if we are not seeking to learn. Life circumstances present challenges; we meet them the best we can, and learn in the process. This is largely reactive learning. Both types of learning are valuable, but the more we are open to learning and consciously seek it out through both formal and informal mechanisms, the faster and greater we advance toward mastery, no matter what the task. Given the security challenges we face, conscious intentional development is the path military leaders must take.

There are two basic types of human development: *horizontal* and *vertical* (Figure 6). Horizontal development refers to acquiring new knowledge or learning new behaviors, skills, and methods that make sense and fit with the current paradigm or worldview. In horizontal development, your worldview and mental models do not radically change. Rather, your learning and development fits into your existing frames of reference. This is the common modus operandi for traditional leadership development.

Figure 6. Two Types of Human Development
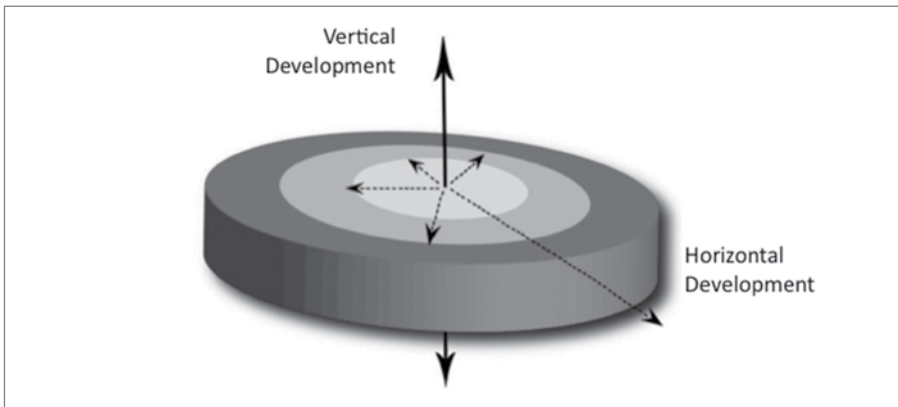
Vertical development is based on a sequence of how worldviews and mental models evolve over time. This is often referred to as adult ego development and describes how a person's internal meaning-making system develops vertically across levels or stages. Each new level transcends and builds on the previous ones as individuals recognize increasing levels of complexity and potential in their worlds.

There is direction to vertical development. Piaget and Erikson were the first to identify stage development in children.[4] Now it is common knowledge that children go through predictable stages of development, which are similar across national cultures. Two-year-olds are fundamentally different than six-year-olds, who are different from ten-year-olds, who have different needs and worldviews than fourteen-year-olds, who do not yet operate as they will as young adults. As youth go through stages of development, they perceive different realities, have different needs and motivations, and display different behaviors. But stage development does not stop at age 18 or 20.

We graduate from youth into adulthood at a certain level of ego development, commensurate with our social culture and systems. In other words, our societies as designed influence our youth's development up to the level the society has progressed. This does not mean that adults must stop developing, only that most do because they do not have access to the social culture and systems than would support further development. But a small minority of adults do continue to develop to higher stages, despite the limits of their social conditioning. For the most part, this takes conscious, intentional pursuit of vertical learning and growth, and only a small percentage of adults have such interest and motivation.

Unintentional vertical development can occur when the challenges we face in our environment demand solutions from a higher stage than that in which we currently unconsciously operate. And that is exactly where we are at as we face our 21st century military challenges. Our security challenges are forcing us to evolve, whether we want to or not.

Externally-driven vertical development is far slower than fully motivated internally-driven development because it gets derailed by denial, resistance, and leaders thinking they already know the answers. For us to ultimately succeed, we need to develop a military culture and system that supports leaders and the rank-and-file to proactively continue their vertical development. Transformation demands it, and so does our world.

Our current military environment stifles vertical development. It tends to squash, limit and curtail out-of-the-box thinking. Innovators are often questioned, sometimes

scorned, even marginalized. The system is built on a power and control matrix where rank rules rather than the best thinking. This can work in a stable environment where vertical insight and innovation are not required, but it is devastating when the challenges in the environment require higher stage solutions than those upon which the system itself is built. We tend to promote leaders that fit within the existing stage of development of our military system, but our current security challenges require more evolved mindsets to solve the challenges we face. However, we marginalize the people with those mindsets. It is a Catch 22 that we must resolve. Keep this in mind as we describe the stages of adult development, for they reveal the transformation needed in both our military leaders and our military (and political) culture.

THE DIRECTION OF VERTICAL DEVELOPMENT

The direction of adult vertical development is straightforward. As people mature and advance up the levels, their awareness both expands and deepens to take in greater perspectives of wholeness and integration. Each successive level has a wider perspective across systems (space), and process (time), as well as perceives more deeply into the interior human dynamic (mindset or consciousness).

The wider a leader's perspective across systems, the more they can see the order in chaos, handle greater complexity, make sense of emergent novelty, listen to diverse points of view, and perceive the inter-connectedness of myriad dynamics. They see interdependencies that others miss, feel more confident in the face of unknown dilemmas, and can more effectively solve challenges that seem to possess irreconcilable differences and polarities.

A greater perspective across time enables leaders to see further into the future, run long-term scenarios with greater practical application, think and perceive more strategically, and sustain longer-term strategic directions. These superior process and systems views aid leaders in long-term planning, immediate responsiveness to surprise, and seeing a larger, more integrated picture across multiple stakeholders, and more distant timeframes. Is this not exactly what is needed for military leaders to excel in current challenges? Seeing more deeply into the human dynamic of mindset and consciousness improves leaders' capabilities exponentially. Later stage leaders know how to:

- motivate people from within rather than only from external force or rank
- build commitment and minimize resistance

- handle emotional reactions and needs
- address cultural diversity
- transform culture and manage cultural impacts
- engage and collaborate with constituents across cultures
- witness with ever-increasing acuity how their own mindsets, beliefs, and ideologies either limit or enhance the perspective, perception, decision–making, performance, and outcomes of what is needed.

The more leaders can see their mindsets in action, the more effective they become because they are not inadvertently limited by unconscious beliefs, whatever the contemporary versions of "the world is flat" may be. They become able to see when their default assumptions blind them to other alternatives, and therefore, know when to check out their assumptions before acting.

Many researchers map the stages of adult development in surprisingly consistent models, most notably Torbert, Kegan, Alexander, Kohlberg, Loevinger, Joiner and Josephs, and Wilber.[5]

As an introduction, Figure 7 shows the stages of development as described by three researchers, Ken Wilber, Susanne Cook-Greuter, and Bill Torbert, and the percentage of stage distribution from three different samples. (Adapted from Susanne Cook-Greuter's paper, "Ego Development: Nine Levels of Increasing Embrace.")[6] Using Torbert's naming protocol, Figure 8 describes key traits of adults at each of the most common stages of Diplomat, Expert, Achiever, Individualist, Strategist, and Alchemist.[7] Understanding the levels and objectively applying them to current military leadership mindsets and style is essential. It is commonly believed that the military operates generally at an Expert/Achiever level. This does not mean that all leaders and personnel are at those levels, but it does mean that the center of the bell curve is there, and that the organizational systems and culture of the military reflect Expert/Achiever.

Strategist is generally believed to be the first level where consistent transformational leadership success can be attained.[8] Conventional leaders (Diplomat, Expert, Achiever) can effectively lead operations and developmental and transitional changes, but it takes post-conventional leaders (minimally Individualists, ideally Strategists/ Alchemists) to effectively design and implement transformational change processes. Why? Because it takes their broader, deeper perspectives on systems, process, and human dynamics to design transformational strategies that have a high probability of success.

Figure 7. Developmental Stages and Stage Percentage Distribution

KEN WILBER	SUSANNE COOK-GREUTER	BILL TORBERT (ACTION LOGICS)	535 MANAGERS & CONSULTANTS IN THE UK	497 MANAGERS & SUPERVISORS IN THE USA	4510 USA MIXED ADULT POPULATION
Transcendent *SOUL*					
Unitive View	Unitive	Ironist	0.9	<1	0.5
Post-Conventional *VISION-LOGIC*	Construct-Aware	Alchemist	5.6		1.5
	Autonomous	Strategist	13.5	1.4	4.9
	Individualist	Individualist	23.4	5	11.3
Conventional *MIND*	Conscientious	Achiever	33.5	34.8	29.7
	Self-Conscious	Expert	21.1	47.8	36.5
	Conformist	Diplomat	1.7	8.2	11.3
Pre-Conventional *BODY*	Self-defensive Impulsive	Opportunist Impulsive	.04	2.2	4.3

Figure 8. Characteristics of Torbert's Stages of Development

Stage of Development	Characteristics
Alchemist	• Fully aware of ego as meaning maker; strong Witness of internal dynamics at play • Holds polarities/paradoxes easily, without stress, to resolve them • Fluid; able to flex with whatever is happening • Committed to service of others; global causes • Aware of limits of language in authentic communication • Sees all life as constant change • Fine-tuned relationship skills
Strategist	• Identity: become the most I can be; walk my talk • Self awareness in action; Embraces "shadow" side of personality • Acceptance of multiple perspectives; while committed to creating one's own meaning • Global view; Life purpose beyond own needs • Continual development of self /others • Flexibility for change
Individualist	• Sees self as unique individual; developing self awareness of mindsets • Relativism: different people see things differently • Expanding beyond rational thought and conditioning; distrusts "convention" • Beginning to feel at ease with change / uncertainty • Visionary: beginning to see new possibilities beyond tradition • Empathy; step in another's shoes; social justice • Interested in other's frames of reference; starting to question underlying assumptions

Stage of Development	Characteristics
Achiever	• Passion for results; common goals; idealism • Independent, but values team to achieve • First stage with significant self awareness / reflection • Scientific method delivers truth; Intellectually skeptical • Relationships important; can agree to differ; responsibility to others • Starting to see systems, longer time horizon to complete team projects
Expert	• Identity = skill or trade talent; sense of specialness; wants to stand out • Values craft and skill excellence • Righteous; know-it-all, ultra-rational, opinionated • High moral standards; dutiful • One-upmanship; yes, but…; not team oriented • Problem solver; multiple solutions within trade focus • Initiator; mover and shaker; being in charge
Diplomat	• Self-identity defined by group affiliation; desire to belong • Conformist; doesn't rock boat; accepts norms of others • Us against them mindset • Need for certainty; stability; status • Nice; pleasant to get along with if on their "side" • Should's; rules; one right way • Co-dependent relationships

This point sounds the critical wake-up call. We must develop military leaders minimally to the Individualist level, and ideally to the Strategist level, if we are really committed to meeting our current challenges. Anything less puts our citizens, countries, Alliances, and world order in jeopardy. Keep in mind, that researchers generally agree that less than 15 percent of the population is at the Individualist level and less than 5 percent at the Strategist level. Extrapolating, this means that roughly 80 percent or more of our military leaders are ill-prepared to meet our 21st century challenges.

In our own work, we have identified four key "sights," or ways of seeing and perceiving, that leaders must develop to succeed at transformation:1) Seeing Systems; 2) Seeing Process; 3) Seeing Internal/External Realities; and 4) Seeing Consciously. From a developmental perspective, these "sights" can begin to be adequately applied at the Individualist and Strategist levels. They are foundational to Conscious Change Leadership. Recalling the Conscious Change Leader Accountability discussion, you can see that leaders must have a long-term *process* view from which they consciously design their transformational change processes to address whole *systems* dynamics at all levels, including between organizations and nations. They must see how the *inner* realities of people's mindsets and organizational and national cultures influence and impact the design and execution of change in their organizations (external). And,

most importantly, they must have a level of *conscious* awareness (Seeing Consciously) where they can discern the beliefs and ideologies of their own mindsets that cause them to unconsciously interpret information the way they do, so they can consciously look through alternative worldviews to perceive what might really be called for to innovate and succeed. This is advanced human development, and is a fundamental, non-negotiable requirement of leading the transformation required in both military culture and systems.

A New Leadership and Organization Capability Development Strategy

It takes a system to transform a system. Organization transformation has many components: building a case for change and vision, new training programs for leaders and staff, new operating and governance structures, new technologies, new communication systems, new roles and job responsibilities, new behaviors driven by ongoing coaching, new reward systems, etc. You do not transform large organizational systems in a piecemeal fashion. It does not work. Each singular component can have a positive impact, but like a pebble dropped into the ocean, the current culture and way of operating absorbs any long term impact. However, if you design a strategy where each component fits with and reinforces the others, is provided in an order and with a magnitude to build on each other, then transformation can get traction and sustain. The strategy needs "force-multiplier" thinking.

Our mission for over thirty years has been developing an integrated system for catalyzing breakthrough in leaders, organizations, and the world. The key to implementing an integrated system for transformation is using an enterprise-level change process methodology that provides alignment of activity, links and integrates all interventions together, and builds momentum so that each piece has maximum sustained impact. In our work, *The Change Leader's Roadmap* serves this purpose.[9]

There is far more to discuss in this regard, but suffice it to say that building a leadership and organization capability development strategy to quickly produce the impact required will demand strategic integration with existing capability and new approaches. This development strategy must put at its center Conscious Change Leadership and long-term support for ongoing Vertical Development in leaders (especially) and staff. It will certainly have many tracks within it, but must include:

- Self Mastery and Personal Leadership Development
- Conscious Team Development
- Change Leadership and Organization Transformation Capability Development
- Application to Real World Initiatives.

SELF MASTERY AND PERSONAL LEADERSHIP DEVELOPMENT

First and foremost, engaging in a leadership and organization transformation endeavor is not a spectator sport. Leaders do not transform their mindsets and up-level their stage of development by learning about these topics. Knowing the models and understanding the concepts are only the first steps. Leaders must actually do the work and engage in their own self-development. The higher in the chain-of-command they are, the more important it is that they pursue their own personal change. Transformation will not occur without senior officers shifting their mindsets and behavior.

This is a critical point sure to generate a heated level of discussion. Jim Kouzes' long-term studies of leaders show that of all the critical factors important to effective leadership, the one that leaders consistently score lowest on is asking for feedback.[10] The norm in current leadership cultures (Expert/Achiever) is that leaders give feedback; they do not get much of it. If they happen to get some, it is usually about what they *do* and not about who they *are*, and they often discount it or do not use it. Their mindset is that others must change, but they already have it right. After all, they hold rank. However, in this 21st century world of required transformation, even the most senior leaders must engage in self-development. They cannot be the ones to hold back. Because they wield the most power and make the most important decisions, their transformation of mindset and behavior is mission-critical. Otherwise, they will not see or will block the needed paradigm-shifting innovations and solutions surfacing from others around them.

What does this kind of personal development entail? For all leaders, it means turning inward, introspecting, and developing greater awareness of who they are, what their beliefs and mindsets are, how they interpret information, make decisions, behave, react and lead. It means identifying the aspects of their leadership style that are contrary to the required shifts in behavior and culture, and modifying those, with ongoing support. It means requesting and understanding, without repercussions, how their leadership impacts others, particularly as it relates to achievement, innovation, and change. It requires recognizing and reflecting on their worldviews, emotional patterns, biases and

perspectives, to identify what aspects of their belief systems are outdated and contrary to what is needed to succeed against today's challenges. They must learn how to re-program old emotional patterns, modify their behavior, and shift their internal state from self-limiting perspectives to solution-generating ones.

What kinds of vehicles and methods support this awareness and personal change and must be built into an overall development strategy? It includes 360 assessments, executive coaching, education and training, and consistent personal skill practices. This development is not an event; it requires a committed, long-term process. Moving to higher levels of adult development requires a sustained journey, an ongoing pursuit of Self Mastery. It requires structure and a formal, intentional process, including professional trainers and coaches who themselves operate at the Individualist level or above. In designing this type and scope of change leader development, we must take a long-term, whole systems view, starting when officers and soldiers first enter the service, and including all ongoing development they receive throughout their careers.

There is power in developing supportive learning communities where leaders can disengage from their rank and uniform and dialogue openly about the challenges they face and learn best practices others are discovering. Most importantly, right from the top of the chain-of-command, leaders must model being open to and proactively seeking learning and development, rather than consistently profess to have the right answers. Such behavior is a transformational catalyst for others, but this notion will undoubtedly raise the rancor of many Expert level leaders in power today. Which leaders among us are willing to start a trend in this direction?

Not all senior leaders are up to this conscious pursuit of Self Mastery, as it is not easy work. In fact, it is the most confronting endeavor any human being undertakes. But if our current military leaders are not up to the task, then we need new leaders who are, and we ought to begin to build our promotion criteria to include self-awareness and vertical development criteria.

CONSCIOUS TEAM DEVELOPMENT

Team norms can be a powerful force for excellence, just as they can be profound inhibitors of human performance and change. The most well-known and often-used model of team development is: "form, storm, norm, and then perform." In other words, teams come together and launch, and then struggle for a while as individuals jostle for power, position, and authority. Then after some time, they fall into a pattern of normalized behavior where the initial anxiety, power struggles, and conflicts dissipate, and

then are they able to really perform to task. This model accurately describes most teams, especially those at the Expert and Achiever levels, where members orient mostly to external reality with little internal self-awareness or self-management skill. When teams form unconsciously, this pattern of team development is the norm. But there is another option that radically increases team effectiveness: Conscious Team Development.

Optimally-performing teams can be developed to produce real breakthrough results by making members conscious of the human dynamics discussed in this chapter. Teams tend to minimize storming and move directly from forming to performing when self-awareness and personal development are essential aspects of team development. When individuals see how their own ego conditioning limits their own and the team's performance, and they take personal responsibility for their behavior, the team excels because they learn faster, share information more, collaborate and innovate, quickly resolve conflict and differences, and are able to have healthy debates that drive better solutions and bind members into a tighter unit.

Conscious team development overtly addresses self mastery, inter-personal communications, conflict resolutions, decision–making and power issues, role clarity, and team culture so members are conscious of the predictable human dynamics that often limit team performance. It develops the self and relational management skills that unleash the human potential of the team.

Because so much military output is team-based, up-leveling the way we form and develop teams is critical. Plus, teams are a manageable microcosm of the larger military culture we need to create, and therefore, are a primary strategic lever for culture change. Teams are also an efficient arena to make change stick, whether it be in mindset, behavior, culture, or new systems. In the current austere fiscal climate, leveraging teams will become even more important.

CHANGE LEADERSHIP AND ORGANIZATION TRANSFORMATION CAPABILITY

Beyond the essential personal work of learning how to change and evolve, organizations also need to acquire and develop change capability for the enterprise as a whole. This has implications for individual leader development, as well as for organizational systems. For leaders to serve this end, they must become competent *change* leaders, which requires developing a number of specialized skills, including:

- Developing transformational change strategies
- Building and course correcting change process plans

- Establishing change governance structures, roles, and decision making
- Building a case for change
- Establishing the vision and desired outcomes for change
- Designing the future state based on new design requirements
- Identifying and resolving human and organizational impacts of the change
- Launching change initiatives effectively and in an integrated way
- Creating stakeholder engagement strategies
- Developing multi-directional communication plans
- Conducting a political analysis
- Building change capacity: stopping or modifying work activities to make room for change
- Building change infrastructures that support change execution
- Creating integrated implementation plans.

The organization must also develop new capabilities. Similar to traditional organizational functions like Finance, Human Resources, Supply Chain, or IT, organizations must develop a new function of Leading Transformation that includes a number of key disciplines to support its execution. These key disciplines include:

Enterprise Change Agenda: This is a mechanism and process to identify and manage all mission-critical change efforts so that the organization's best (and limited) resources are clearly working on the most highly leveraged changes. Developing this Agenda ensures regular strategic oversight at the most senior levels of what change initiatives are occurring in the organization and their progress. It reduces redundancies and overlaps and maximizes efficiencies.

Common Change Process Methodology: As noted, transformation requires a special strategic process to navigate its dynamics and integrate key tasks. When organizations have a common change process methodology, they are able to consistently design and implement change that aligns and sticks.

Establishing Change Infrastructures: These are common ways (e.g., templates, protocols, tools) to launch initiatives, govern, communicate and engage stakeholders, learn and course correct, integrate across departments and change efforts, and interface with ongoing daily business. Establishing such infrastructures further ensures the best use of resources, accelerates change, and enables the continual development of best practices over time.

Strategic Change Center of Excellence: This vehicle ensures best practice devel-

opment and use, ongoing change leadership capability development, best use of the common change methodology, case management, and optimal use and skill of internal change agents and consultants.

Strategic Change Office and/or Chief Change Officer: This function and/or senior leader ensures that the organization's mission-critical priorities are being addressed in the most timely and effective manner, and that conditions for success are in place and respected so that required transformational outcomes are delivered in the best way possible.

Once established, these organizational disciplines serve the overall transformation of the organization, as well as ongoing change initiatives within or aligned with it. Not all disciplines may be essential in any given organization, but they are all value-added. Each needs to be tailored and applied at the organizational level, and ideally, supported across organizations to make the best use of resources and investment.

APPLICATION TO REAL WORLD INITIATIVES

Leaders cannot develop conscious change leadership and organization transformation capabilities solely in the classroom. Such development can and should start there, but must immediately be applied to real-world initiatives and challenges. Change won't wait! Leaders must apply their personal changes, team development, and new change leadership capabilities to both their operational leadership and to the major change initiatives called for by their organizational priorities.

This requires a development strategy that intentionally integrates classroom learning with real time application. Sustained support for this can consist of several vehicles. It can be formal, as in providing an in-depth developmental curriculum leaders will engage in over several years. It can be learning and information-based, including ongoing learning clinics where leaders and project managers share best change practices and get questions answered and challenges solved by both professional facilitators and peer coaches. It can also include change strategy coaching and consulting on actual initiatives. Each organization undertaking transformation will need to assess their requirements for change leadership development, building enterprise change disciplines, and support for ongoing change projects.

Conclusion

The need for a military transformation is upon us. We must respond in conscious, innovative, and aligned ways. The authors perceive this as perhaps the greatest

opportunity ever facing the military, and not just a threat to our ability to fulfill our national and global security missions. Our environment is forcing us to evolve, and with that development will come greater peace and security because we will succeed. We have the ability to adapt, and because we are smart and well-intentioned, we can muster the required resources and personal will.

We have attempted in this article to review the leadership breakthrough and development process that we believe is essential to meeting this challenge. Achieving this breakthrough will not be simple, quick or cheap; however, it is essential. Yes, we need to define the issues more clearly, and we need to develop an integrated strategy collectively across military organizations to maximize our impact given the resources available. But most importantly, we need to raise this conversation to the levels of authority that can make a difference now. We do not have the luxury of time to ponder these issues leisurely. It is time to act, to demonstrate the courage required to step outside the norms of currently acceptable thinking and behavior. We need to question how we have done things in the past, and whether they will serve how to approach our radically different challenges. We must be willing to step into a new paradigm of design principles that will direct us to co-create new solutions. Mostly, we simply need to each ask ourselves, "What am I not yet conscious of, that by becoming conscious of it, I will see the path to success?" If we each do that, we cannot help but secure a world favorable to our children and our planet.

Notes

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Chapter 3

Effective Leadership for a Complex World:

A Developmental Approach

Sandra M. Martínez, John Agoglia, and Matthew Levinger

In an April 2013 address at the National Defense University, U.S. Secretary of Defense Chuck Hagel emphasized that U.S. military forces "must continue to adapt in order to remain effective and relevant in the face of threats markedly different than those that shaped our defense institutions during the Cold War." Hagel observed:

> The United States military remains an essential tool of American power, but one that must be used judiciously, with a keen appreciation of its limits. Most of the pressing security challenges today have important political, economic, and cultural components, and do not necessarily lend themselves to being resolved by conventional military strength.[1]

Numerous strategic planning documents issued by the U.S. Department of Defense (DOD) in recent years have stressed the need to better integrate joint, interagency, intergovernmental and multinational resources to protect U.S. national security. For example, the 2010 Quadrennial Defense Review declared: "Preventing the rise of threats to U.S. interests requires the integrated use of diplomacy, development, and defense, along with intelligence, law enforcement, and economic tools of statecraft, to help build the capacity of partners to maintain and promote stability."[2] The 2012 Capstone Concept for Joint Operations issued by the Joint Chiefs of Staff envisions the development of "globally integrated operations" in which "[j]oint force elements postured around the globe can combine quickly with each other and mission partners to harmonize capabilities fluidly across domains, echelons, geographic boundaries, and organizational affiliations."[3]

Due to the nature and complexity of current challenges and to apply the learning of more than a decade of war, General Martin E. Dempsey, the Chairman of the Joint Chiefs of Staff (CJCS), and others are calling for deep inquiry about the education of military and security professionals, especially highlighting Joint Education.[4] Dempsey emphasizes the pivotal importance of learning and leadership in the education and development of the military. He has also highlighted the critical role of innovation in the development of this system to ensure that future leaders in security are well prepared to meet present and future challenges as they emerge. As CJCS, he has offered further guidance in the form of white papers on the *Profession of Arms*, *Mission Command*, and *Joint Education*.[5] Several entities within DOD have responded to the Chairman's call for discussion and review about the orientation and implementation of military education, including a Joint Education Review undertaken by the Military Education Coordination Council (MECC) Working Group.

This chapter seeks to complement these ongoing efforts to enhance the relevance of Joint Education to the emerging twenty-first-century national security environment. We advocate adopting an adult developmental perspective to use as a framework to better structure and deliver Professional Military Education (PME) and Joint Professional Military Education (JPME). The authors identify a critical need for an underlying logic and framework to ground our understanding of military capabilities and make choices about how to effectively develop these capabilities among security professionals across a continuum of professional levels and throughout the span of a career. We see a need to "unpack" the identified desirable attributes (what we would call competencies and capabilities) of military and security professionals in order to define the underlying capacities that contribute to the ability to operate successfully in joint, interagency, intergivernmental and multinational environments. By examining leadership education through the lens of a developmental perspective, we seek to offer insights into how Joint Education programs can be refined in order to prepare military officers for leading more effectively in complex security environments with diverse partner organizations.

A basic tenet of a developmental approach is a belief that adults do indeed continue to develop along many dimensions and that it is possible to support and accelerate the development of leadership capacities. We argue in this chapter that, although the current PME JPME curriculum provides military officers with the subject matter expertise and skills in the tactical and operational dimensions of battlefield command, they are less successful in cultivating the higher-level strategic leadership qualities required for effective collaboration with joint, interagency, intergovernmen-

tal and multinational partners. As this paper makes frequent references to leadership, a definition is required: *Leadership in the volatile, uncertain, complex, and ambiguous environments in which we live is essentially shaping a desirable future (in the present) in collaboration with parties of diverse perspectives.* This paper elaborates what capacities are required in order to effectively fulfill this role.

After a description of adult developmental perspective and a discussion of the Officer Professional Military Education Policy (OPMEP), we use two concepts of importance to military operations to demonstrate the utility of the developmental perspective: 1) The decision loop concept commonly known as OODA (Observe, Orient, Decide, Act), which we rework to better capture all the elements of effective decision-making and action and rename SODAR (Sense, Orient, Decide, Act, Reflect); and 2) Mission command and intent. In both instances the developmental perspective enriches our understanding of the cognitive and emotional requirements for effective action. In order to illustrate our argument, we present two case studies: the first describing the complex challenges of collaborative efforts of the International Security Assistance Force (ISAF), a reconstruction and stability mission in Afghanistan, and the second narrating a successful counterinsurgency initiative also in Afghanistan. Following each case study we explain how the framework we use fosters deeper understanding of the capabilities and processes required for success in complex operations. We draw some conclusions and end with recommendations for further action.

Leadership Development from a Developmental Perspective

Organizations have long approached leadership development by seeking to identify specific traits, styles, or competencies of effective leaders. After decades of research, we now understand that effective leaders are distinguished less by their personal traits or style than by their world view or "*action-logic*": the perspective that reflects leaders' way of making sense of their experience. An action-logic is an internally consistent system of making meaning of one's world, including assumptions about causal relationships and interpretations of experiences, which in turn influence one's behavior.[6] As one develops, one's operative action-logic becomes increasing complex, adaptable, and flexible. At later stages of development, there is a greater range of choice precisely because there is an awareness that many choices exist about the perspective one adopts and the action one takes to respond to a situation or challenge.

A developmental perspective is particularly relevant to the security context and challenges at the current historical juncture. A major tenet of this perspective is that

development is not exclusively about "knowing" more, but instead expanding one's capacity to make sense of the world in a qualitatively different and more complex manner and the increasing capacity to act in a timely and effective way. At later, more mature stages of leadership this involves acknowledging and valuing other perspectives with the capacity to engage individuals and groups of diverse vantage points to work together toward a shared goal.

The Leadership Maturity Framework (LMF), sometimes known as the Leadership Development Framework (LDF), is one of the most finely tuned and sophisticated models of adult development.[7] The Leadership Maturity Assessment Profile (MAP), the developmental assessment associated with the LMF, is currently one of the most rigorously validated and reliable assessment tool in developmental psychology.[8] As a theory, the LMF accounts for how adults make sense of their experience at seven different levels of maturity.[9] Table 1 describes the stages or action-logics of the LMF.

Table 1. Action-Logics

Action-Logic	Qualities & Capacities	Strengths
Opportunist	Focus on winning at any price; manipulative; focus on self-survival	Tendency to perform well in sales, emergencies, and in the short term
Diplomat	Loyal; respects existing norms; avoids overt conflict	Helps create harmony in working groups
Expert	Values expertise and logic; seeks rational efficiency	Generally productive as individual contributor
Achiever	Achieves strategic goals through teams; interested in self-improvement through feedback and introspection; future-oriented; comfortable in logical world of linear causality	Action and goal-oriented; tends to perform well in managerial roles
Pluralist/Individualist	Explores assumptions and cultural conditioning of his/her socialization process; recognizes multiplicity of possible meanings and interpretations of events; strives to integrate personal and organizational values and goals	Effective in consulting and entrepreneurial ventures
Strategist	Fosters organizational and personal transformations; Understands interdependencies among systems and can perceive systemic patterns; adaptive in multiple and overlapping social systems; leaders with "fierce resolve and humility"; knows his/her strengths yet acknowledges vulnerabilities; deep appreciation for human differences in capacity and development	Effective as transformational leader; brings strategic orientation to complex initiatives
Alchemist	Generates social transformations; simultaneous focus on short and long term; global perspective; aware of paradox	Creates learning organizations; leaders of society-wide transformations

Adapted from Cook-Greuter "Making the Case for a Developmental Perspective," and David Rooke and William R. Torbert "7 Transformations of Leadership."

The LMF recognizes that people's maps of reality differ from one another in predictable and significant ways—which has led to the creation of a ladder of developmental stages—each successive stage reflecting increasing complexity, quality, and comprehensiveness of thought. People's 'maps' of themselves and the world they inhabit increase in complexity and become more realistic approximations of the underlying territory. So, for example, the degree to which individuals would be aware of their habitual patterns of thinking and acting and the assumptions underlying them (their world view or mindset), their awareness of the world view of others, and, further, their ability to use this understanding to engage others effectively depends on their level of leadership development. Also, their capacity for collaboration and ability to build relationships of trust in complex situations and among many diverse actors is also related to their level of development. In short, the Leadership MAP describes and measures a person's mindset, as it governs how he or she makes sense of and acts in the world.

The authors hypothesize that our military organizations and most other security organizations operate at an "Expert"/"Achiever" stage level, producing and rewarding this stage of development. Some security organizations function at an "Expert" level as evidenced by their tendency to champion their type of expertise over others, their difficulty in accepting feedback, inability to look at themselves objectively, or to collaborate. Others are dominated by an "Achiever" culture, characterized by an orientation toward outcomes, an appreciation of future opportunities, and a capacity for reflective learning. Because they recognize the motivations and expectations of others and respect mutuality in relationships, Achievers are often effective managers and are usually capable of building commitment to shared goals among stakeholders of an organization.

Because of their focus, preferences, and capacities, Achievers are absolutely essential to the efficient and effective performance of any organization. However, for organizations to meet the challenges of today's complex security environment successfully there is a need to nurture the development of the action-logic of the "Strategist." It is only at the Strategist level that individual leaders and their organizations have the capacity to adopt a systemic view to perceive the interrelationships among systems (whether teams, units, organizations, sub-cultures, societies, etc.) and achieve the requisite levels of collaboration and learning in order to transform themselves and their organizations to respond flexibly and adaptively to opportunities and threats in a complex environment.

Research has shown that "Achievers" need to develop to the "Strategist" level through a "Pluralist/Individualist" stage, in which they question the cultural prescriptions for behavior and the goals and strategies of the organization and other groups within which they function as they seek to reconcile their need for authenticity and other personal needs, while simultaneously meeting the needs of their profession and organization.[10] In the context of this framework, we need to support this development of highly motivated, high-potential leaders of great integrity to move through a period that is inherently unconventional to reach a higher-level capacity for leadership.[11] The current PME and JPME system educates the "Expert/Achiever" very well. We need to find a way to support future leaders through unconventional stages to a "Strategist" level of mastery. While developing these leaders, we must simultaneously transform our organizations of national security into leadership cultures in which the development of such leaders is consciously and responsibly nurtured.

Officer Professional Military Education Policy, Process and Institutions, and the Review Process

The OPMEP is the foundation for the design and implementation of a continuum of training and education conducted in all U.S. institutions responsible for officer career education. The OPMEP outlines expectations and defines outcomes within a schedule for both the introduction and the mastery of specific areas of content, as well as the development of increasingly complex cognitive activities over time. At every stage, there is a continued emphasis on character development and ethics. Curriculum for each level of education across all the Services beginning at the pre-commissioning phase for cadets and midshipman through the primary phase (O-1/O-2/O-3 grades), the intermediate (O-4), on through the senior level (O-5s and O-6s), and then into the General and Flag officer education is guided by this policy. Knowledge and capabilities critical to joint, interagency, intergovernmental, and multinational operations are embedded at each level of the OPMEP system. Civilians of comparable grades from U.S. security agencies and also military officers representing our international allies and partners are participants in the courses and programs, as officers advance to higher levels.

The linear continuum of development is reflected in the description of the focus for each level of education. At the pre-commissioning level, the schoolhouse lays a foundation in leadership, management, and ethics, as well as grounding in U.S. defense institutions and the specific military service students have chosen. At the

primary education level efforts address the tactical level of war, while endeavoring to "foster an understanding of joint warfighting."[12] Then, at the Intermediate level at Service PME Institutions and JPME Institutions, officers develop their "analytical capabilities and creative thought processes." Officers are also introduced to "joint plans, national military strategy, joint doctrine, joint command and control, and joint force requirements."[13] Senior PME and Joint Senior JPME Institutions prepare officers and their civilian counterparts for positions of strategic leadership with content of "national security strategy, theater strategy and campaigning, joint planning processes and systems, and joint, interagency, intergovernmental, and multinational capabilities and integration." The intention is to foster "critical examination, encourage creativity, and provide a progressively broader educational experience."[14] Finally, generals and flag officers are prepared for "high-level joint, interagency, intergovernmental, and multinational responsibilities." Among other areas, the content of these programs for generals and flag officers include "grand strategy, national security strategy, national military strategy, theater strategy, and the conduct of campaigns and military operations in a joint, interagency, intergovernmental, and multinational environment to achieve U.S. national interests and objectives."[15] At this, the highest level, the OPMEP does not delineate specific developmental objectives, but simply seeks to ensure the progressive and continuous development of the executive officers.

Among the numerous parties reflecting on the state of the OPMEP system, conflicting views exist about the degree to which the current institutions are adequately preparing the forces and/or are capable of the adaptation required for continuous improvement. We believe that PME and JPME institutions do a good job of developing tactical and operational competencies and capabilities. Morever, through a combination of content, experience, self-development, mentoring, and the commitment and good intentions on the part of formal and informal leaders and educators in our institutions, as well as the drive, character, and intelligence of the individual student/professionals themselves, leaders capable of exercising higher level capabilities emerge from the system. We see examples of this in individual case studies of courage and success in operations. However, it is critical to more consistently and systematically develop leaders capable of executing effectively by mastering the critical "attributes" (competencies) to ensure our national security and international collaboration to protect our national and internationally shared common interests. What is required is a leadership culture that fosters these qualities and capacities at an organizational level in order to encourage the transformational leadership required by the challeng-

ing environment to respond adaptively, accelerate learning, and maintain competitive advantage in relation to one's adversaries.

Operational Concept: The OODA Loop

The OODA (Observe, Orient, Decide, Act) loop is an important element of Mission Command[16] and an operational concept well-known to military professionals. This chapter will discuss the OODA loop to illustrate the utility of advanced knowledge about adult development, learning, and change in the design and implementation of education and leadership development tools and programs for security professionals. In the late 1970s, U.S. Air Force fighter pilot Lieutenant Colonel John Boyd described the OODA loop for use in combat operations, originally applied to the strategic level. In the following paragraphs, we describe and integrate additional features into a decision loop model, as well elaborate elements of the process that were part of Boyd's original feedback loop, but which subsequently were not emphasized. We update the model to fully reflect Boyd's insights and to integrate knowledge of adult development, learning, and change. This perspective significantly increases the usefulness of the model for complex, uncertain, and volatile environments. To reflect the innovations in the loop, the authors have recast the OODA loop as SODAR (Sense, Orient, Decide, Act, Reflect).

Figure 1. The OODA Loop
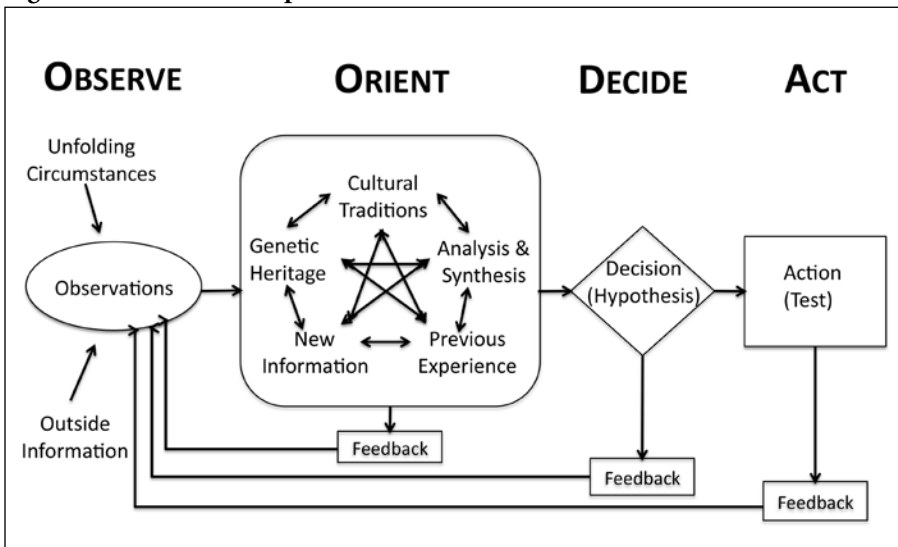
This process functions as a conceptual model within which individuals and groups, with varying levels of awareness of this process itself, make their decisions. According to Boyd's model, a person has to acquire information ("Observe") before determining what it means ("Orient") and then how to use it ("Decide" and "Act"). Boyd identified the "Orient" phase of his OODA loop as the most important part of the model because he recognized that it is at this point in the process that individuals and organizations structure (make sense of) the information they have observed in the first phase of the loop.[17] Decisions ("Decide") which he Boyd casts as hypotheses are tested by the Action. The degree to which the framework or mindset used to structure (make sense of) the information in the "Orient" phase reflects the complexity of the "terrain" to better approximate the reality influences the effectiveness and timeliness of decisions and the actions they foster. Boyd explicitly acknowledged in his original model that the ways in which we shape this information are influenced by our genetic heritage and cultural mindsets, an insight that has been supported by further research in cognitive science and social science.[18]

Acknowledging the importance and role of one's mindset (action-logic) or way of explaining the world resonates in a powerful way with the developmental model expressed in the Leadership Maturity Framework (LMF), which defines development as a substantive change in the quality and manner in which an individual explains the world (structures reality) and makes sense of one's experience. Rather than viewing development as simply increasing one's knowledge about particular content areas, the LMF explains how one's patterns of thinking and action are influenced by one's perspective on the world.

In developing into what are called "post-conventional stages" (Pluralist/Individualist, Strategist, and Alchemist), one becomes more aware of the many influences that govern one's behavior; thus a greater capacity emerges for deliberate choice of action in complex and ambiguous environments. In particular, leaders who have developed to the later and post-conventional stages, moving though a Pluralist/Individualist stage to what we describe as a Strategist or later, have the capacity to influence work in the "Orient" stage to more accurately reflect the complexity of the environment. It is only at the first stage of post-conventional development, the Pluralist/Individualist, that one becomes aware of how the cultural prescriptions of family, culture, organization have influenced one's behavior and world view to date. As individuals become more aware of the frameworks, previously unexamined, that shape their actions, they are freed to choose among a greater range of possible decisions and actions.

Figure 2. SODAR
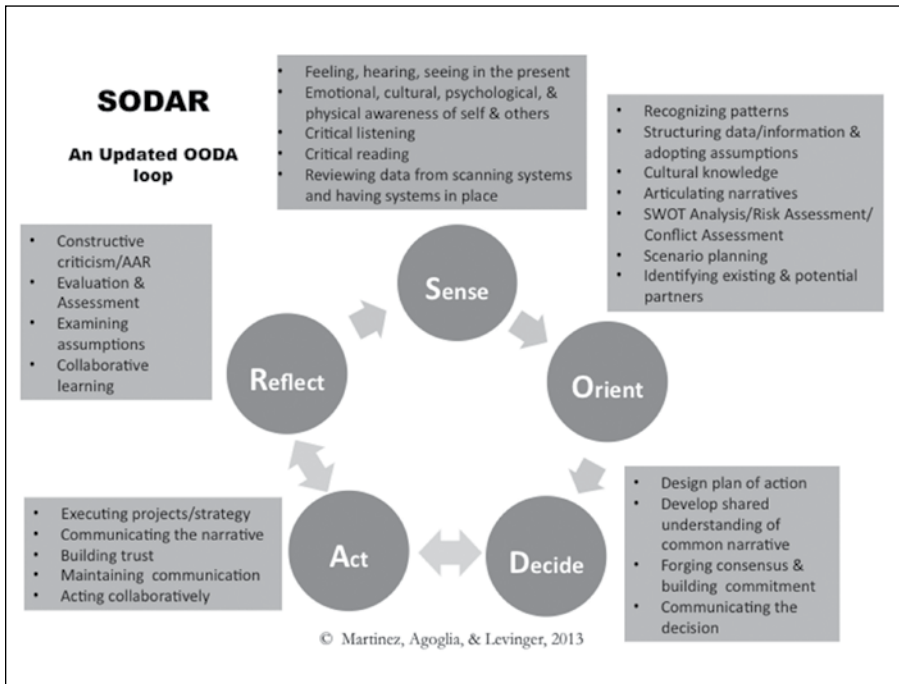
THE SODAR LOOP

The SODAR loop introduces two principal modifications to Boyd's model. First, we change the "observe" stage of the OODA loop to "sense," a term that is more inclusive. Individually and at a collective level, we use all of our senses and a broad range of scanning devices and activities to gather data. Second, we add the fifth stage of "Reflect," which was less explicitly articulated in Boyd's OODA loop even though it is absolutely essential to learning and effective action.[19] Also, we elaborate each phase by defining explicit competencies and capabilities which can contribute to effective outcomes in complex operations requiring high levels of collaboration among multiple and diverse participants.

Here we define the elements of the SODAR loop at the group, organizational, and inter-organizational level. These decision loops are enacted at an individual and team level with overlapping time intervals. Hence, one can see the ever-present need for authentic communication to understand how those around one are making sense of the environment, what causal model is influencing their action, and what different parties (actors) are learning based on their interpretation of results.

Sense. In the achievement-oriented institutional culture of the U.S. Department of Defense, action is often valued more than reflection. But, because an action can have unintended consequences, making a difficult situation even worse, effective leaders recognize the need to appreciate the environment and define a situation before acting. The competencies and capabilities required for effective sensing include:

- *Feeling, hearing, seeing in the present*
- *Emotional, cultural, psychological, and physical awareness of self and others*
- *Communication skills—Inquiry and Dialogue*
- *Critical listening and reading*
- *Establishing, maintaining, and utilizing quantitative and qualitative data-gathering systems to scan the environment to indentify emerging opportunities and threats.*

Observing and communicating are vitally important actions in and of themselves, and must be valued as such by those at every level of the hierarchy, including at the top of the chain of command.

Orient. In this phase of the loop, participants 'make sense of' or structure the data that has been collected in the previous phase. By synthesizing and analyzing using a variety of tools and processes participants begin to give form to a narrative by highlighting some elements of the data and minimizing the importance of others. As mentioned earlier, the quality of work at this stage and subsequent stages is dependent on the degree to which participants account for their assumptions. The competencies and capabilities associated with this step include:

- *Recognizing patterns*
- *Structuring data/information*
- *Identifying assumptions*
- *Cultural knowledge*
- *Articulating narratives*
- *Conflict analysis/Risk assessment. A structured deliberative process for identifying key actors and issues that drive a given conflict, as well as opportunities for building peace.*
- *SWOT analysis (Strength, Weakness, Opportunities, and Threats). A tool for identifying the strengths and weaknesses of one's own organization vis-à-vis the opera-*

tional objective, as well as opportunities in the external environment. The situation analysis is also useful in identifying potential institutional partners that might help compensate for gaps in the resources or expertise of one's own organization.

- *Scenario Planning. A collaborative method for constructing a range of possible futures based on critical uncertainties, trends, risks, opportunities, and threats in the operating environment, and for examining the implications of each of these potential futures for one's own course of action, including what capabilities will be required to meet a range of possible scenarios.*

Decide. In this step, the individual, group, or organization moves from the assessment and analysis of 'Orienting' to the design of a plan of action based on the understanding which emerged from the previous phases. Based on elements of the situation defined by the adopted narrative, e.g., players, complexity, risk, scope, and who is implementing, the decision may be made unilaterally or at some level of collaboration or consensus. However the decision is made (and collaboration with multiple participants, if possible, is always the best way to ensure commitment), the decision must be communicated effectively among all stakeholders within the organization, including interagency, intergovernmental, and multinational partners. The competencies and capabilities for this step include:

- *Developing a shared understanding of a common narrative. A strategic narrative identifies the scope, the relevant issues, and the challenges, as well as the opportunities for addressing them. By giving scope, contour, and sequence to the data, the participants identify the strategic issues and the options for effective action. An organization can often strengthen its alliances and enhance its influence by framing this narrative collaboratively or at least in terms that resonate with the concerns of local and international partners.*
- *Designing the plan of action*
- *Forging consensus and building commitment*[20]
- *Communicating the decision.*

Act. In the action phase, the organization's leaders need to remain alert to changing conditions in the operating environment and to adjust accordingly. This is represented by a two-directional arrow in the loop. The competencies and capabilities for this phase include:

- *Executing projects/initiatives*
- *Communicating the narrative*
- *Building trust*
- *Maintaining lines of communication*
- *Acting collaboratively with joint, interagency, intergovernmental, and multinational partners.*

Reflect. This stage involves a process of assessment and learning that informs future decision-making and feeds into the next cycle of the SODAR loop. The competencies and capabilities for this phase include:

- *After Action Reports (AAR)*
- *Evaluation and Assessment*
- *Making assumptions explicit and reexamining them*
- *Collaborative learning and adaptation.*

Post-conventional leaders who have mastered the five stages of the SODAR loop can foster an increased tempo of learning in their organizations. This is not only achieved by the focus on the "Orient" phase of SODAR, but also by the discipline of reflecting on the consequences of a given course of action and adapting one's future actions accordingly. For example, at higher levels of development, individuals become more aware of the nature of experimentation in learning and more readily able to use it. Leaders who are less attached to one particular explanation of the environment or situation are more open to experimenting in order to test a hypothesis, and to accept when evidence emerges that is contrary to their preferred interpretation. This flexibility throughout the phases of the SODAR loop is a critical factor enabling the agility and tempo required in complex operations. It is a key element of the *Understanding* or "*inner eye*" described in the *Mission Command* white paper, a learning cycle that maintains a competitive edge.[21]

Case Studies: Applying the SODAR Loop at the Strategic, Operational, and Tactical Levels

The competencies and capacities associated with each stage of the SODAR loop range from simple and intuitive habits, which should be inculcated in every soldier throughout the Joint Force, to complex analytical tasks that are exercised primarily

by senior officers. For example, in the SENSE phase of the SODAR loop, every soldier in a unit on patrol must cultivate the capacity for feeling, hearing, and seeing in the present; whereas the Battalion Commander may bear primary responsibility for risk assessment and early warning in the ORIENT phase. Also in the ORIENT phase of the loop, every soldier must be adept at pattern recognition, whereas military planners in the Combatant Command Headquarters may focus more on situation analysis and scenario planning. However, throughout this decision-making loop, the role of leaders is paramount in cultivating a culture and environment in which subordinates communicate well, even when their perceptions run counter to existing trends and opinions, and where there is mutual respect and trust among subordinates and superiors, learning is valued, and the commander maintains communication about mission command and intent.

The two case studies presented below, both of which are based on experiences of the International Security Assistance Force (ISAF) in Afghanistan, illustrate how the SODAR loop can help inform decision-making at various levels of command. The first case study focuses on the strategic level of mission planning. The second, drawn from the experiences of 1st Battalion, 5th Marine Regiment in the Nawa district of Helmand Province in 2009-2010, illustrates how the SODAR loop can be applied at the operational and tactical levels, and the critical role of leadership in successful operations.

CASE STUDY 1: DEFINING THE STRATEGIC NARRATIVE

Building collaborative capacity requires recognizing and taking into account the diverse missions and objectives of key actors in one's Area of Operations. In Afghanistan, U.S. President Barack H. Obama has emphasized the role of U.S. military forces in *countering terrorist threats* to the American homeland: he defines U.S. objectives as to "disrupt, dismantle, and defeat al Qaeda in Afghanistan and Pakistan, and to prevent its capacity to threaten America and our allies in the future." The World Bank, by contrast, focuses on *governance and economic development*: its programs seek to build "the legitimacy and capacity of institutions, equitable service delivery, [and] inclusive growth and jobs" in Afghanistan.[22] Mercy Corps, an American non-governmental organization, presents yet a third set of operational objectives: it aims to "*improve the quality of life of ordinary citizens* by strengthening sustainable, legitimate livelihoods" in Afghanistan.[23]

In the absence of a unified command structure linking together ISAF, the World Bank, and Mercy Corps, personnel from each of these organizations must work to

identify mutual synergies and avoid potential conflicts. ISAF's military operations can play an essential role in creating a secure environment for economic development and institution-building, thus supporting the agenda of the World Bank and Mercy Corps. Conversely, these two organizations can support ISAF's counterterrorism work by helping lay a foundation for stable peace in Afghanistan. Yet there is also potential for these organizations to work at cross-purposes and undermine each other's objectives. For example, money intended for development projects may be diverted to the Taliban, exacerbating threats to U.S. troops; or negative attitudes among the Afghan people toward the U.S. military presence may endanger American civilians working for Non-Governmental Organizations in rural Afghanistan.

Not only must U.S. military commanders work to harmonize their operations with those of diverse international partners, they must also communicate effectively and build trust with local residents. Ali Ahmad Jalali, who served as Afghan Interior Minister from 2003 to 2005, argues that "the absence of a shared vision for Afghanistan has blurred the distinction between means and ends," leaving many in the region "to question whether the U.S.-led operation is aimed at securing Afghanistan, reshaping the whole of South Asia, or simply setting the conditions for a responsible exit plan."[24] Miscommunication and mutual distrust have frequently exacerbated tensions between ISAF troops and local communities in Afghanistan. For example, after the United Kingdom took over leadership of the Helmand Provincial Reconstruction Team in early 2006, the security situation in the province deteriorated, partly as a result of aggressive British counter-narcotics efforts that alienated those who benefited from the opium trade. A common explanation among people of the province for the worsening security situation in 2006 was that "the British were consciously sabotaging Helmand" in order to "avenge the Battle of Maiwand" of 1880, in which Afghan insurgents had decimated a British military force in Helmand.[25]

The SODAR loop offers a useful analytical framework for U.S. strategic leaders who are seeking to maximize the leverage of ISAF's resources in cooperation with international and local partners, as well as to avoid unintended negative consequences:

In the SENSE phase of the loop, U.S. military and civilian leaders need to be aware of all of the key actors and resources (both international and local) in the Area of Operations. They also need to apply critical reading and listening skills to recognize the objectives, concerns, and fears of these various actors.

In the ORIENT phase, strategic leaders should seek to understand and articulate a full range of narratives that informs the missions and actions of these various

groups. They should utilize SWOT analysis and scenario planning to identify the strengths and weaknesses of both ISAF and potential partner organizations to collaboratively shape a vision of the future, and to use joint capacity to seize opportunities and mitigate emerging threats.

In the DECIDE phase, U.S. strategic leaders need to reach out to their counterparts in existing and potential partner organizations in order to shape a shared strategic narrative. Developing a shared narrative is a critical prerequisite for building commitment about core objectives and designing a common plan of action. Although some parties might disagree and/or maintain a very different perspective, it is critical to continue to engage these parties with divergent vantage points not only to inform them, but also to seek constructive feedback throughout the process. In this way one maintains an awareness of how an action might be perceived at multiple levels and to identify blind spots in logic and perception.

In the ACT phase, the leaders need to maintain lines of communication and continue to build trust with partner organizations. At a minimum, it is essential to *de-conflict* the actions of the various organizations operating in a shared space. Whenever feasible and appropriate, it is helpful to actively *collaborate* in carrying out the shared mission.

In the REFLECT phase, U.S. strategic leaders should actively engage with their counterparts in a collaborative learning process. The goal of this process is not to assign credit or blame, but rather to identify and reevaluate key assumptions, and to test them against experience. The ultimate objective is to refine and adapt the plan of action so that it is most likely to result in strategic success.

These lessons drawn from ISAF's experiences in Afghanistan have broader implications for future complex operations around the globe. In an era of fiscal constraint coupled with increasingly complex national security challenges, it is critical for U.S. military and civilian leaders to leverage their combined resources more effectively, in collaboration with international and local partners. By utilizing the SODAR framework in decision-making processes, leaders at the strategic and operational levels can maximize their ability to forge collaborative capacity with joint, interagency, intergovernmental, and multinational partners.

CASE STUDY 2: MISSION COMMAND AND INTENT IN AFGHANISTAN'S NAWA DISTRICT

Mission Command and Intent, as one of the organizing principles of military operations, has evolved to reflect the challenges of the current security environment.

The flexibility required to transition from strict command and control to models of emergent and shared leadership in various configurations implied by *Capstone Concept for Joint Operations: Joint Force 2020,*[26] assumes collaborative and communication capacities which need to be further developed across a broader spectrum of individuals and groups and throughout the hierarchy of these groups.

Empowering individuals to exercise and act on their judgment in how to advance the commander's intent respects a principle of adaptability and timely action whereby those closest to the environment can often more effectively Observe, Orient, Decide, and Act. Of course, communications technology can enhance command and control capabilities by enabling high levels of connectivity between commanders and their subordinates. Conversely, however, the proliferation of communications devices means that every action of security forces is potentially visible and open to interpretation by a wide array of actors. Thus, an action that would previously have only had local ramifications can now take on a life at national or international national levels, influencing outcomes in either positive or negative ways. Consequently, the former gap between the tactical and strategic levels is narrowed, as tactical operations more readily affect the strategic environment.

The record of 1st Battalion, 5th Marine Regiment in restoring security and some semblance of normality to life in the Nawa district of Helmand province in 2009 offers an example of the blurring of lines between the tactical, operational, and strategic levels in contemporary warfare. The battalion's success in Nawa inspired a series of articles in the *Washington Post,* and was lauded by leaders including General Stanley McChrystal, General David Petraeus, and Afghan President Hamid Karzai.[27] Some senior policymakers invoked 1st Battalion's example in arguing for further U.S. troop deployments as part of a "surge" campaign plan for Afghanistan. We narrate some of this story here to examine more carefully the combination of factors that contributed to success in securing stability and how we might apply what has been learned.

When we spoke with the unit's commander, Lieutenant Colonel William McCollough, in early April 2013, he began the story by describing the education and training of the battalion. The battalion had the advantage of one year of preparation. The first stage of training was the development of common military skills: the fundamentals of attacking, patrolling, defending, and mastery of weapon systems, as well as the ability to comfortably maneuver with each other while integrating fire. He emphasized that this training in lethal operations is important because the mastery achieved accomplishes two things. "Primarily, it generally ensures that the battalion

and its units win every fight they are in. Two, it affords individuals and units within the battalion the confidence and knowledge to be able to recognize when a situation has devolved to the point at which it is necessary to engage in a fight. This understanding frees his men to make mature decisions about when to engage in a battle and when not to. "…To know where these lines are drawn, though, we have to be aware of our capabilities. We've seen what the potential threat is, we've mitigated it, so then we can concentrate on the objective, which might be meeting with the mullah. Of course, our overall objective is to create a District that no longer supports the Taliban."

This leads us to the other component of the training, developing good judgment which involves sensing skills, recognizing when something is amiss, and making a decision about when to take action and what action to take. Further, as the situation changes, good judgment involves recognizing when there is a need to re-assess whether the task is still appropriate to the intent. To the point, during the later stages of the training, unit leaders would deliberately set up tasks that were not totally aligned with the 'intent' of the mission (without the knowledge of their men), to allow the men to develop, exercise judgment, and take the initiative about when to change the nature of the task they were given because they recognized its lack of alignment with the mission intent. "Regard the task, recognize the opportunity, see risks to opportunity, mitigate risks, and seize the initiative . . . having the flexibility to do this is the fruition of exercises designed to develop an understanding of mission command and intent through subordinate unit leaders."

"During the entire training and education process, we are building trust and implicit communication among one another. We work to build confidence in ourselves and in the capabilities of our fellow units and individual Marines and Sailors. Additionally, we gain an understanding of how our leaders and subordinates think and communicate, and the awareness that unit commanders will rely on them to be their sensors and to communicate what they learn."[28]

Entering the environment: On a moonless night in June of 2009, McCollough and 100 of his Marines arrived in several helicopters to relieve a British Army platoon that had been caught in a Taliban stranglehold in what had formerly been the Nawa district government center in the Helmand Province. Another 200 arrived across land and linked up with the helicopter-borne force. Fighting throughout the next day and the following night, the Marines rid the government center of the Taliban. The next morning village elders confronted McCollough with questions about what the Marines were doing. McCollough explained that they had replaced the British and were

going to kill and drive away the Taliban who had been controlling the District and were committing extortion and execution-style killings. Also he reassured the elders that all damages incurred by the village to property during the fight would be compensated, and that the Marines would do their best to protect the villagers who might get caught in the fighting. "We are not here to destroy your villages and homes. We're here to help you take them back from the Taliban, and will leave once your police and army can prevent the Taliban from stealing them from you again. We are your best friend, and the Taliban's worst enemy." Those elders that had approached with anger departed with a muted sense of possibility. "The incremental work of counterinsurgency had begun."[29]

For several weeks there was sporadic fighting with the Taliban being steadily beaten and pushed back from the District Center. Many Taliban were killed and some fled, taking refuge in neighboring Marjah, about 10 kilometers to the west of Nawa. Two weeks after the initial insert, McCollough and the 300 Marines were joined by the remaining 700 men of the battalion who flew into landing zones behind the new Taliban positions. The Taliban now found Marines to their front and in their rear. These Taliban positions were overrun, their fighters killed, and within a week the "remaining Taliban members fled or went underground…at this point those that remained were watching, not fighting." Soon afterwards, the government center and the bazaar reopened. A district governor was installed. The battalion was joined by U.S. and British government workers who in collaboration with Marine civil affair officers begin to set priorities for work that would result in a District that was no longer hospitable for the Taliban, could protect itself, and would be self-sustaining.

Explaining the importance of demonstrating power, McCollough stated that, "the good rapport and communication we were able to develop so quickly with the community was due [initially] to an overt demonstration that we were in control. . . . In short, the Taliban were overwhelmed. We had to make it clear that we were effective at maintaining security. If all the initial interactions had been punctuated by violence, even low-level, disruptive, random shots, then the locals would have begun to look at us like the Taliban and all the other previous groups who have violently disrupted their lives. What they saw instead was that we were far more powerful, disciplined, and numerous than the Taliban, and many decided that siding with us was their best bet at guaranteeing their future. Others took a wait and see attitude, but every violence-free week saw more villagers siding against the Taliban."

The companies maintained patrol bases and acted in concert with one another

in order to have the capacity to decisively win any fights with the Taliban. Sooner than McCollough had anticipated, he was able to split up the platoons to reach further, occupy more space and interact with more of the locals. "In spreading units out, I wanted them to develop deep knowledge of the terrain. We could go with what we knew, or what the locals knew. I believed that what the locals knew was better. It was important for us to understand the terrain from the point of view of the locals. Also, we viewed every interaction as a negotiation . . . at every point we were negotiating the type of relationship we were going to have from that point forward. Would they help us target the remaining Taliban? Would they help us prevent Taliban attempts to return? Would they help us help them set up structures that would enable them to defend and administer their own district? Essentially we were negotiating with the locals to help us run an inoculation program—a program that would inoculate them from a Taliban return. When platoons moved into a different area, there was a renegotiation." As a rule, 36 squads conducted two foot patrols a day to maintain security and determine which Afghans held the keys to the future of the District.[30]

"After the district had largely quieted because we had displaced the Taliban, it became important for us to determine how the residual society made decisions. Platoon commanders and squad leaders moved into position. Because we had developed an ability to communicate clearly with each other, at the end of the day I knew all the seventy or more additional things that were happening each day,…information that we could potentially use to further alienate the Taliban from the population. What I knew were largely the things that my men discovered."

Much of what the patrols did was try to identify the informal leaders in the population. It was easy to identify the formal leaders: the person who controlled the water supply, the mullah, and the district governor. "We were looking for the 'connectors,' 'salesmen,' and 'mavens,'[31] those who moved the news, influenced events and had the capacity to change trends. Also, with limited time and ability to interact, I needed to identify who among the Afghans would have perspectives valuable to us. We wanted to know from them who were the individuals that they did not like in the Taliban. How could we exploit these grievances? Also, what were the things that drove away certain segments of the population. Because of their training, my men knew how they could maneuver to observe and identify who these pivotal individuals were, and they knew how to let one piece of information lead them to another piece, until a picture emerged of how the population operated, and how it made decisions."

McCollough chose the following scenario to illustrate this work: "One of my sergeants joined a small group of men having tea in the field. When the sergeant approached the group, nobody stood up. Other Afghans approached and they greeted them, but did not stand. However, another guy showed up and they all stood up. What did this mean? This guy was not a mullah, did not have a government position, nor control the water; yet, he clearly was respected and had some influence. If the judgment of this sergeant had developed from his training and experience, he would realize that there were many possible actions he could take at this point and he would choose effectively among them. He could have stood and directly introduced himself at the moment or reported back his observation and then called for the assistance of others to decide how to learn more about this person. Perhaps this man was a teacher, university-educated. Was he on our side or not? Was he thinking similarly to us or not? We sensed he was influential, but was he potentially on the side of the functioning government? "After finding out where this man lived, and comparing notes from other patrols, we realized that this man was treated the same way in multiple parts of the district. In actuality, this sergeant had identified a critical connector for me. His importance lay in the fact that he moved freely between multiple villages all of whom put stock in what he had to say. He was a person who spread the news, whom the locals trusted to tell the truth. How this man interacted with the mullahs, the police and the district officials became more important. His influence became a tool that could work for our ends, or against them. Before we could do anything to influence him, however, we first had to be aware that he existed."

McCollough realized that it was better for one of his lance corporals or sergeants on patrol to ask these questions. "Questions from me signified something different than questions from the men. The Afghans were very conscious of our rank structure. People often told me what they thought I wanted to hear. But the Lance Corporals and Corporals got the unvarnished answers, the information that lay closer to the truth, or at least the local perception of the truth. How we gathered information had to be planned, with the right people asking the right questions of the right Afghans.

In describing both these scenarios, McCollough referred to the SODAR loop. "We were acting in the Orient stage of the SODAR loop, trying to make sense of things and establishing an operational framework to make decisions about what action to take. Once a decision was made we would act and then assess the results in the Reflect stage of the SODAR loop. If new information had been gathered (SENSE phase), we would consider whether to alter our overall framework (ORIENT). If not, we might act in a sort of smaller

loop moving from the assessment (REFLECT) to a modified decision and action loop as an experiment to access results again after the Action."

"As you enter a population, there are different levels of understanding. The first level offers you the ability to move to the second level of questions which requires more observation. These questions are less often those that can be answered with simply a 'yes' or a 'no.' Instead they lead to a higher level of understanding that allows you to gradually have greater influence over the entire environment. You begin to recognize what you are looking for and what is the operational environment that will allow you to recognize relevant anomalies in behavior in order to construct the operational framework, the way of thinking about things, that allows you to act effectively.

"I had learned from my experience as an advisor embedded in an Iraqi battalion that to be successful as an advisor it was necessary for me to look at problems and situations through the eyes of the Iraqi battalion commander, his staff, his soldiers, and the villagers caught in between the insurgents and the Iraqi army. Seeing something from someone else's perspective gives you an opportunity to adopt a workable framework in order to make decisions and act more effectively. At the end of the day, we needed to create a situation that met our end state, and was also sustainable without our presence. The first part was by far the easier task of the two."

McCollough is reluctant to draw broad overarching conclusions about the applicability of lessons learned from the success of the 1st Battalion in Nawa to other operations, cognizant of the many different factors involved and the many variables that may differ among operations and initiatives, e.g., national cultures and politics, preparation time available, and individuals involved. Although McCollough always attributes his success to all his men—and the authors concur—it is clear that his leadership set the tone and pace for the men in his battalion and signaled to Afghans, Allies and partners in the field his openness to other perspectives and his willingness to collaborate toward shared goals. The fact remains that he was clearly successful in this operation.

We can identify some elements that contributed to his success, move it to a high abstract level, look to operations that require similar capabilities, and from there derive some valid conclusions and recommendations:

Leadership Capacity: As a leader, McCollough has developed and matured beyond what we would identify as an "Achiever" into a later post-conventional stage, which we have before stated as a requirement for successful leadership in complex environments and for transformation. We see the complexity of his thinking in his understanding of

the interrelationships among different groups and societies as they come to bear on the dynamics of Nawa. Also, he accepts the notion that 'meaning' resides in the beholder and the legitimacy of many different perspectives and interpretations of events and behaviors and is comfortable testing his own assumptions. He uses his understanding of these multiple views to increase his knowledge and understanding of the 'terrain.' This capacity contributes to his flexibility in testing his assumptions and responding more quickly to new information. His comments about how our understanding grows by levels as we make sense in different ways of our environment also illustrates this. We know about his collaborative capacity from the comments of others. Moreover, his ability to act in the present with focus and calm amid chaos and danger, something he demonstrated during the early fighting, is a sign of a Strategist stage of maturity and earned him the nickname, the 'Jedi,' among his enlisted Marines.[32]

Using the Sodar Loop: The SODAR loop, more fully than the OODA loop, captures the process of sensing and creating a framework by which to make decisions. McCollough's experience underscores the importance of the ORIENT stage to success in complex operations in general, and counterinsurgency in particular. It highlights the importance of the notion that an operational framework becomes more complex with greater fidelity to the complexity of the 'terrain' as it is expanded and structured by information resulting from a SENSE phase. Although he did not call it the SODAR loop, McCollough guided his men in a process to build a more robust understanding of the environment in order to make better decisions, leading to more effective and timely action. Then he encouraged them to assess and re-assess.

Mission Intent: The SODAR loop encompasses the competencies required for decision-making, action and learning. For the sound execution of Mission Intent in complex operations, good communication, trust, and confidence in one's subordinates and peers are required. Effective leadership ensures that these capabilities are developed and that a dynamic climate of learning exists in the field to foster adaptability.

Anthropological Approach to Understanding the Terrain: This process of inductively building knowledge of an environment from the point of view of the inhabitant of the territory is drawn from anthropological processes.[33] It is a specific application of the SODAR loop, with special utility for working in foreign environments. It contributes to success in the field by helping develop knowledge about the "terrain," in stages of increasingly greater depth and perhaps paradox.

Understanding of Change and Transformation: If a goal is some form of societal change, some understanding of the transformation process is required. In this second

case study, a recognition of the need to identify influential local actors and understand the source of their power in order to influence opinion and patterns of behavior was captured by use of the "maven, salesmen, and connectors" model.

Conclusion

In the paper we have illustrated with case studies how a developmental perspective and, specifically, the stages of development ('action-logics') of the LMF offer deeper understanding about how individuals, along a developmental continuum, make sense of their experience, view relationships and power, and respond to opportunity and conflict, among other life situations. Further, we have elaborated how 'action-logic' (developmental stage) influences habits of mind and action and, by extension, effective strategy and execution in the short- and long-term. Using the SODAR loop, we have demonstrated: 1) how this knowledge can better surface and explain critical elements of a decision-making loop, 2) how this model introduces important and pragmatic innovation to leadership development and education of the military and security professionals in general, and 3) this model's compatibility to both the goals of U.S. military strategy and its relevance to the present and future complex challenges of security.

RECOMMENDATIONS

We recommend:

- That the SODAR loop be introduced to PME and JPME curricula in order to institutionalize greater awareness of important elements of the process of decision-making, action and reflection, including an emphasis on the importance of being aware of the framework that is used as the context or rationalization for decisions.
- That capacities currently identified as strategic and formerly only explicitly developed at higher–level institutions of the PME and JPME system be nurtured in a developmentally appropriate manner at the lower levels with opportunities for students to experiment and reflect in order to accelerate learning and development.
- That the developmental perspective represented in the LMF be adopted for use as a springboard for innovation to revitalize and bring more scientific rigor to the PME and JPME system.

- That the precepts of the learning organization continue to be emphasized in operations and that these precepts be institutionalized with a simultaneous focus on not only individual development but also on transformation at the organizational and institutional level leading to a 'leadership culture' which nurtures leaders of high integrity and later stage leadership capabilities.

PROPOSALS

We visualize the following proposals as innovative projects complementing the valuable insights of the MECC.

- Identify and prepare best practice case studies which illustrate the utility of a developmental perspective for education and leadership development of security professionals.
- Crosswalk the Leadership Maturity Framework with the competencies MECC has identified at each level of the PME and JPME system.
- Using the LMF, organize and design methodologies for effective development of capacities required at each level of the PME and JPME system.
- Design and conduct a study to test the hypothesis about the action-logic of the military being primarily (Achiever) by using the Leadership MAP as an assessment to measure development. (The study would be designed to maintain the anonymity of the participants to safeguard the confidentiality of individual results.) The results could serve as guidance to inform the design of curriculum and the focus of programs and workshops. On an individual basis, the results could be used to debrief and coach developmentally the person to whom the assessment was administered.
- Design and implement a pilot program using this framework as an integral continuum for courses at an institution at each level of PME/JPME: e.g., Captains Career Course at the Maneuver Center of Excellence, a course at the Command and General Staff School, a course at the U.S. Army War College and/or Joint Advanced Warfighting School, and for a university-based General and Flag officers program.
- Design and delivery of workshops to leaders and educators about the SODAR loop and its application and use of the workshops as a lever for development and innovation.

Much has been stated about the complex challenges of security. What is absolutely transparent is that to maintain agility, leadership, and a competitive advantage vis-à-vis one's adversaries, it is of paramount importance to understand and apply advanced knowledge. The developmental perspective and the LMF, in particular, offer an opportunity for innovation with profound potential to enhance adaptive, collaborative, and strategic leadership by military officers and other national security professionals.

Notes

[1] Chuck Hagel, Speech at the National Defense University, Ft. McNair, Washington, DC, April 3, 2013, available at <www.defense.gov/transcripts/transcript.aspx?transcriptid=5213>.

[2] *Quadrennial Defense Review Report* (Washington, DC: Department of Defense, February 2010), v, available at <www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf>.

[3] *Capstone Concept for Joint Operations: Joint Force 2020* (Washington, DC: Joint Chiefs of Staff, September 10, 2012), 16, available at <www.defenseinnovationmarketplace.mil/resources/JV2020_Capstone.pdf>.

[4] Joint Education is Joint Professional Military Education (JPME), a multiservice approach designed to foster greater collaboration across the services, as well as with other US agencies and international Allies and partners. This approach was institutionalized by the Goldwater-Nichols Act passed in 1986. As operations have become even more complex, new terms have emerged to capture the multiplicity of partners and players (multiple U.S. military Services, other agencies and departments of the U.S. Government, military forces or agencies of other countries, non-governmental persons or entitites, as well as commercial entities) that participate in planning and execution of operations which military officers must be prepared to lead. For example, the U.S. Army uses the acronym JIIM to signify Joint, Interagency, Intergovernmental, and Multinational.

[5] *America's Military—A Profession of Arms: White Paper* (Washington, DC: Joint Chiefs of Staff,), available at <www.jcs.mil//content/files/2012-02/022312120752_Americas_Military_POA.pdf>; *Mission Command: White Paper* (Washington, DC: Joint Chiefs of Staff, April 3, 2012), available at <www.jcs.mil//content/files/2012-04/042312114128_CJCS_Mission_Command_White_Paper_2012_a.pdf>; *Joint Education White Paper* (Washington, DC: Joint Chiefs of Staff, July 16, 2012), available at <www.jcs.mil/content/files/2012-07/071812110954_CJCS_Joint_Education_White_Paper.pdf>.

[6] Susanne R. Cook-Greuter, "Making the Case for Developmental Perspective," *Industrial and Commercial Training* 36, no. 7 (2004), 275-281.

[7] The LMF is based on Susanne Cook-Greuter's research in Adult Ego Development and on William Torbert's theory of Personal and Organizational Transformation; Susanne R. Cook-Greuter, *Postautonomous Ego Development: A Study of its Nature and Measurement*, Dissertation (Boston, MA: Harvard University/Integral Publishers, July 7, 2010); William Torbert, *Action Inquiry: The Secret of Timely and Transforming Leadership* (San Francisco: Berrett-Koehler, 2010).

[8] Cook-Greuter, *Postautonomous Ego Development*; Torbert, *Action Inquiry*, 210-215. The Leadership Development Profile (LDP) was developed collaboratively by Susanne Cook-Greuter and William Torbert. The assessment is continually improved as new data is analyzed. The most recent version of the assessment is the MAP.

[9] See Cook-Greuter, "Making the Case for a Developmental Perspective, 275-281; David Rooke and

William R. Torbert, "Seven Transformations of Leadership" *Harvard Business Review* 84, no. 4 (April 2005), 67-76. In theory there are nine different action logics, including an early-stage 'Impulsive' which precedes the 'Opportunist' and the 9th stage, 'Ironist,' following the 'Alchemist.' We do not include an account of these in this paper nor use them in our work as they are very rarely encountered working in an organizational setting.

[10] One of the primary tenets of constructive developmental theory, what we call a developmental approach in this chapter, is that adults progress in their development through sequential and unidirectional stages of increasingly complex and integrated systems of meaning making to interpret reality. Cook-Greuter, *Postautonomous Ego Development*; Robert Kegan, *The Evolving Self: Problem and Process in Human Development* (Cambridge, MA: Harvard University Press, 1982); Robert Kegan, *In Over our Heads: The Demands of Modern Life* (Cambridge, MA: Harvard University Press), 1994.

[11] Sandra M. Martínez, "Emergent Leadership: Linking Complexity, Cognitive Processes, Adaptability, and Innovation," in *Crosscutting Issues in International Transformation: Interactions and Innovations among People, Organizations, Processes, and Technology*, ed. Derrick Neal et al., 119-145 (Washington, DC: Center for Technology and National Security Policy, 2009), 139.

[12] *Officer Professional Military Education Policy (OPMEP)*, CJCSI 1800.01D (Washington, DC: Joint Chiefs of Staff, July 15, 2009), Chapter 1 updated December 15, 2011, A-A-3, available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf>.

[13] Ibid., A-A-4.

[14] Ibid., A-A-5.

[15] Ibid.

[16] *Mission Command: White Paper*.

[17] Boyd also addressed how to impact the OODA loop process of an opponent to gain a strategic advantage.

[18] John R. Boyd, *The Essence of Winning and Losing*, a five slide set by Boyd, presented 28 June 1995, available at <http://danford.net/boyd/essence.htm>.

[19] Aware of the need to communicate in a vocabulary that is meaningful to audiences of varying levels of experience and 'action-logics,' we will sometimes change the R of Reflect to an R of Reassessment. Both terms suggest the competencies required for the phase; however, we prefer Reflect because it more richly connotes the range of activities in this phase and also more fully represents the change in approach we wish to advocate. This modification and flexibility was suggested by Lieutenant Colonel William McCollough, Commander, 1st Battalion, 5th Marine Regiment, interview with the authors, April 9, 2013.

[20] It is best to foster commitment by encouraging participation of all or most stakeholders in a process. However, when full participation is not possible or when there is participation but no agreement, consensus is an alternative goal.

[21] *Mission Command: White Paper*, 5.

[22] "Afghanistan Interim Strategy Note, 2012-2014," *The World Bank*, June 5, 2012, available at <www.worldbank.org/en/news/feature/2012/06/05/afghanistan-interim-strategy-note-2012-2014>.

[23] "Afghanistan: Our Strategy," *Mercy Corps*, accessed March 27, 2013, available at <www.mercycorps.org/afghanistan>.

[24] Ali Ahmad Jalali, "Afghanistan: Long-term Solutions and Perilous Shortcuts," *PRISM* 1, no. 4 (September, 2010), 58.

[25] Jean MacKenzie, *The Battle for Afghanistan: Militancy and Conflict in Helmand*, New America Foundation Counterterrorism Strategy Initiative Policy Paper (Washington, DC: New America Foundation,

September 2010), 5-6, available at <http://counterterrorism.newamerica.net/sites/newamerica.net/files/policydocs/helmand2.pdf>.

[26] *Capstone Concept for Joint Operations: Joint Force 2020*, ii, 4-16.

[27] Rajiv Chandrasekaran, "In Helmand, a Model for Success?" *The Washington Post,* 22 October 2009, available at <www.washingtonpost.com/wp-dyn/content/story/2009/10/21/ST2009102104197.html?sid=ST2009102104197>; Rajiv Chandrasekaran, "Nawa Turns into Proving Ground for U.S. Strategy in Afghan War," *The Washington Post*, 10 December 2012, accessed 17 April 2013, <www.washingtonpost.com/wp-dyn/content/article/2010/12/11/AR2010121103041.html>.

[28] All quotes in this vignette, unless otherwise indicated, were made by LtCol McCollough during our conversation with him on 9 April 2013 in Pentagon City, VA.

[29] "Marine's Success in Afghanistan Has a History," *This Fucking War*, December 31, 2009, available at <http://thisfuckingwar.blogspot.com/2009/12/marines-success-in-afghanistan-has.html>.

[30] Chandrasekaran, "In Helmand."

[31] Lieutenant Colonel McCollough made direct reference to the terms in Malcolm Gladwell's book *The Tipping Point: How Little Things can Make a Big Difference* (New York: Little Brown, 2000). He categorized three types of agents of social change who exercise a disproportionately powerful influence over others. 'Connectors' are the social equivalent of network hubs, individuals who link many people and whose social reach often spans several different groups. 'Salespeople' are charismatic individuals whose powerful negotiation skills make them very persuasive. 'Mavens' are information specialists in a particular area and act as information brokers, both sharing and trading what they know. Although Gladwell's references were made primarily in relation to market trends and concepts, this framework is useful to use in attempting to influence societal change and transformation by learning from and deliberating supporting those that have the potential in concert with other factors to alter trajectories of social behavior.

[32] Tony Perry, "Marine's Success in Afghanistan Has a History," *The Los Angeles Times*, December 21, 2009, available at <http://articles.latimes.com/2009/dec/31/world/la-fg-afghan-insurgency31-2009dec31>.

[33] James R. Spradley, *Participant Observation* (Belmont, CA: Wadsworth Publishing Co.), 1980.

Chapter 4

Leader Adaptability and Human Hardiness[1]

Paul T. Bartone

Ever since the end of the Cold War, the United States military has served in a wide range of missions that put high demands on the level of professional expertise required of leaders. This new reality calls for a level of personal maturity and judgment beyond what was expected of junior leaders previously. Today's military leaders must be highly skilled and knowledgeable in increasingly complex technologies, including information technologies, and capable of autonomous decisionmaking in rapidly changing and ambiguous situations.[2] The modern professional military officer must be able to take a wider view than past military leaders and see a more comprehensive perspective on the surrounding operational, organizational, social, and political domains of experience. There is also an increasing need for military leaders at all levels to possess what traditionally have been viewed as essential attributes for senior or strategic leaders, attributes such as broad conceptual capacity, divergent thinking, and creative problem solving skills.[3] For example, Day points to the need for expanded conceptual capacity in leaders, essential in order to maximize adaptability across a wide range of unforeseen situations.[4]

The need to adapt quickly to changing circumstances has indeed grown substantially in today's world.[5] New technologies, equipment and systems appear at a fast pace, changing the way many work tasks get accomplished.[6] In addition to changing technologies, increasing globalization of operations for many firms means that employees often must learn to function effectively in unfamiliar cultures and languages.[7] The concept of adaptability has been broadly applied at many levels, from biological systems,[8] to individuals,[9] to teams,[10] organizations,[11] and even entire nations or cultures.[12] Regardless, adaptability always has to do with effective change or adjustment in response to changing conditions.[13] A recent report by the Defense Science Board goes even further, defining adaptability as "…the ability and willingness to anticipate the need for change, to prepare for that change, and to implement changes in a timely and effective manner

in response to the surrounding environment."[14] This report also notes that in the new and rapidly changing global environment, the ability of defense agencies, and military organizations and personnel to adapt is essential to successful performance.

A detailed and work-behavior oriented model of adaptability was provided by Pulakos, Arad, Donovan and Plamondon in an influential report.[15] Based on a careful review of relevant literature, these authors posit a "taxonomy" of adaptive performance that includes the following eight dimensions: 1) Handling emergencies or crisis situations; 2) Handling work stress; 3) Solving problems creatively; 4) Dealing with uncertain and unpredictable work situations; 5) Learning new work tasks, technologies, and procedures; 6) Demonstrating interpersonal adaptability; 7) Demonstrating cultural adaptability; and 8) Demonstrating physically oriented adaptability. These dimensions were supported by exploratory and confirmatory factor analytic findings,[16] and by additional empirical studies examining predictors of adaptive job performance.[17] These authors found that (self-reported) past experience in behaviors related to the eight adaptability dimensions was a predictor of adaptive performance (as measured by supervisor ratings). In addition, adaptive performance was predicted by cognitive ability ($r = .14$), and even more significantly by the non-cognitive variables of achievement motivation ($r = .31$) and emotional stability ($r = .18$). These findings highlight the potential importance of non-cognitive variables as well as cognitive ones to influence successful adaptive performance.[18]

The present study was undertaken to test the potential influence of a promising non-cognitive or personality variable, psychological hardiness, on later adaptive performance of military officers. Military personnel today are called upon to perform a wide variety of functions, from peacekeeping, nation building and disaster response, to counterinsurgency and combat operations. As noted in the Defense Science Board report, successful performance in this new and rapidly changing security environment calls for military personnel, and especially leaders, who are agile and quick to adapt to novel situations, and are relatively unperturbed by uncertainty.[19] In this context, it is important to select officer candidates who are most likely to develop into adaptable leaders, and also to train and develop them in ways that maximize later adaptive performance.

Psychological hardiness is a constellation of personality qualities found to characterize people who remain healthy and continue to perform well under a range of stressful conditions.[20] The key facets of hardiness are: Commitment—an active engagement and involvement with the world, and a sense of meaning in life (versus

isolation); Control—a belief that through effort one can influence events and out-
comes; and Challenge—a receptivity to variety and change. As a personality variable,
hardiness appears to be largely distinct from the "Big Five" personality dimensions
of neuroticism, extraversion, openness, conscientiousness, and agreeableness.[21] For
example, in a study that examined hardiness alongside the Big Five dimensions, har-
diness was a unique predictor of military cadet performance beyond any variance
accounted for by the Big Five factors.[22]

The concept of hardiness is theoretically grounded in the work of existential
philosophers and psychologists[23] such as Heidegger,[24] Frankl,[25] and Binswanger.[26] It is
a broad, generalized perspective that affects how one views the self, others, work, and
even the physical world (in existential terms, *umwelt*, the "around" or physical world;
mitwelt, the "with" or social world; and *eigenwelt*, the world of the self). People high in
hardiness see life as meaningful and worthwhile, even though it is sometimes painful
and disappointing. The commitment facet of hardiness builds on the work of Anton-
ovsky, whose "sense of coherence" entails commitment and engagement with others,
which lends resistance to the ill effects of stress.[27] White's ideas on self-awareness and
striving for competence also influenced Kobasa's understanding of commitment.[28]
Hardiness-commitment provides a sense of internal balance and confidence which is
important for realistic assessment of stressful and threatening situations.

The control facet of hardiness derives primarily from Rotter's concept of locus
of control.[29] Kobasa's emphasis on control was also influenced by extensive experi-
mental research showing that when subjects have control over aversive stimuli, the
stress effects are substantially reduced.[30] In the hardiness model, challenge involves
an appreciation for variety and change in the environment, and a motivation to learn
and grow by trying new things. Primary theoretical influences on challenge are Fiske
and Maddi on variety in experience,[31] and Maddi on engagement versus alienation.[32]
Maddi used the term "ideal identity" to describe the person who lives a vigorous and
proactive life, with an abiding sense of meaning and purpose, and a belief in his own
ability to influence things.[33] This is contrasted with the "existential neurotic," who
shies away from change, seeking security and sameness in the environment. Although
Kobasa described hardiness in terms of these three personality traits (commitment,
control, and challenge), it is best considered as a general style, a holistic pattern rather
than individual, discrete traits. In Adler's terms, hardiness would be a "worldview"
or broad framework that people apply to interpret their entire experience.[34] It is a
generalized style of functioning that includes cognitive, emotional, and behavioral

features, and characterizes people who stay healthy under stress in contrast to those who develop stress-related problems.

Since Kobasa's original report on hardiness and health in high-stress executives,[35] an extensive body of research has accumulated showing that hardiness protects against the ill effects of stress on health and performance. Studies with diverse occupational groups have found that hardiness operates as a significant moderator or buffer of stress.[36] Hardiness has also been identified as a moderator of combat exposure stress in Gulf War soldiers.[37] Psychological hardiness has emerged as a stress buffer in other military and security groups as well, including U.S. Army casualty assistance workers,[38] peacekeeping soldiers,[39] Israeli soldiers in combat training,[40] Israeli officer candidates,[41] and Norwegian Navy cadets.[42] Studies have found that troops who develop PTSD symptoms following exposure to combat stressors are significantly lower in hardiness, compared to those who do not get PTSD.[43] Moreover, there is evidence that high hardy soldiers not only adapt better during operational deployments, but also adjust more favorably in the months following their return from deployments.[44]

Earlier research at West Point found that hardiness predicts several important outcomes for military officers in training. For example, across multiple West Point classes, Kelly and Bartone found that hardiness (commitment) predicts successful completion of a rigorous 6-week Cadet Basic Training. Hardiness-commitment also predicts retention throughout the four-year West Point experience, and successful graduation.[45] Total hardiness and the hardiness facet of commitment were also found to predict military performance scores, which are the grades received by cadets for their performance of military and leadership tasks. Other studies found hardiness-commitment to be a stronger predictor of retention at West Point than the traditional weighted composite (Whole Candidate Score) of academic aptitude, leadership, and physical fitness indicators.[46] In this same study, hardiness was second only to high school class rank in its relationship to military performance scores.

Based on these earlier findings as well as theoretical considerations, it was expected that psychological hardiness in cadets should be predictive of adaptive performance as Army officers. Conceptually, hardiness is a set of qualities that confers resistance to the ill-effects of stress. Many studies have confirmed that people who are high in hardiness adjust to stressful conditions more effectively than those low in hardiness, both in terms of health[47] and performance.[48] This entails adjusting effectively in the face of changes and unexpected events in life. High hardy persons

typically interpret experience as 1) overall interesting and worthwhile (commitment), 2) something they can exert control over (control), and 3) challenging, presenting opportunities to learn and grow (challenge). They also favor proactive, problem-solving coping strategies, as opposed to avoidance or denial.

All three of the hardiness facets could contribute to adaptive performance. Commitment should help people be more adaptable in novel and rapidly changing situations, since the high commitment person tends to see all experience as interesting and meaningful, and also has a strong sense of self and confidence in their own abilities.[49] People high in commitment are more intimately engaged with the world, seeing their experience as generally meaningful and important. They are more interested in what is going on around them, more attentive, and thus more likely to perceive different aspects of situations, as well as to envision multiple possible response alternatives.

Control should likewise lead to greater adaptability, since people high in control approach novel situations with the belief they can respond well and influence outcomes. Regardless of changing conditions, those with a strong sense of control tend to believe they can influence and manage events effectively. Studies have shown, for example, that hardiness increases the sense of self-efficacy, which in turn can lead to more positive and healthy behaviors.[50]

Challenge should also facilitate greater adaptability. By definition, hardiness-challenge involves an abiding acceptance of change in life, and a proclivity for variety. People high in challenge enjoy novelty and tend to see changing circumstances as an opportunity to learn. Thus, challenge should facilitate a person's adapting to changing conditions. Based on these considerations, it was hypothesized that overall hardiness scores as well as scores on the commitment, control, and challenge facets would be related to adaptive performance as military officers.

Summary of Research Methods

PARTICIPANTS

At the start of the research, participants were all freshmen cadets in the West Point classes of 2005 and 2006 (N= 2,383 combined). These were typical West Point cohorts in terms of gender (16 percent female) and race (24 percent non-white), and graduation rate (N= 1,818; 76 percent). Initial survey distribution to the graduates of the Classes of 2005 and 2006 was conducted in September 2008 and September 2009 respectively. Graduates had typically attained the rank of First Lieutenant in the United States Army.

Of the 1,731 graduates from both classes that received a survey, 694 responded with completed surveys (40 percent response rate). Of these 694 respondents, 259 also forwarded the commander survey to their direct supervisors for completion (37 percent). This is consistent with previous graduate surveys, where only about 40 percent of graduates pass the commander survey on to their supervisors. Of the 259 commander surveys distributed, 145 were completed and returned (56 percent response rate).

PREDICTOR VARIABLES

Hardiness. To measure hardiness, this study used the Dispositional Resilience Scale—DRS-15 (v.1), which includes 5-items each to measure the hardiness facets of commitment, control, and challenge.[51] The scale was administered as part of the Reception Day (R-Day) battery of tests taken by all new West Point cadets shortly after they arrive as freshmen. The commitment scale of the DRS-15 measures active engagement or involvement in life, as opposed to alienation. Control measures the belief that one can influence events in their experience, as opposed to a sense of powerlessness. Challenge measures openness and receptivity to variety and changes in life, which are seen as opportunities (as opposed to a threat perspective, or the tendency to see change as threatening and frightful). The DRS-15 shows very good measurement reliability, as indicated by Cronbach's alpha reliability coefficients of .82 for total hardiness, .77 for commitment, .68 for control, and .69 for challenge.[52] The 3-week test-retest reliability coefficient is .73.[53]

Whole Candidate Score (WCS). The WCS is a weighted composite of high school academic performance (includes high school rank, Scholastic Aptitude Test (SAT)Verbal and Math scores), leadership performance (extracurricular activities including school officers, newspaper, music, scouting, debate, foreign study, and faculty appraisals), and physical fitness (assessment on standardized physical exercises, including kneeling basketball throw, long jump, pull-ups, and shuttle run). WCS scores were obtained from the West Point Admissions Office records.

SAT Total Score. In addition to WCS, total SAT score (verbal + math) was included as a separate predictor of adaptability performance. SAT scores were also obtained from West Point Admissions Office records.

PERFORMANCE MEASURES

Measures of performance were obtained at two intervals, as seniors at West

Point, and as graduates three years later. For the measure of leader performance at West Point, we used the Military Performance Score (MPS). The MPS is the cumulative (over all four years of undergraduate work) weighted average of grades received in sixteen domains of leadership and military performance. Evaluations are made by the cadet's military chain of command and instructors, including: cadet summer training and military duty performance during each term (70 percent Total) and Military Science courses during the Academic Year (30 percent Total).

Adaptability as military officers was measured with self and supervisor ratings of adaptability in a survey mailed to graduates three years after their graduation and commissioning. The survey questions were part of a larger set developed by the West Point Institutional Assessment Committee to evaluate the military, leadership, intellectual, physical, moral-ethical, and human spirit dimensions of development. Response options reflect ratings of the graduate's ability to perform in each of the skill areas, using a five-point Likert rating scale ranging from "Very Confident" to "Not At All Confident."

Adaptability. The adaptability scale was constructed from a subset of ten survey items (Cronbach's alpha = .90) that were judged to closely map with the dimensions of the Adaptive Performance Taxonomy of Pulakos et al.[54] Only items that appeared in both the 2005 and 2006 surveys were used in this scale. The adaptability scale covers all 8 of the Pulakos et al. adaptability dimensions.[55] Scores reflect the mean rating of the 10 items making up the scale. (See Table 1).

PROCEDURES

The DRS-15 hardiness measure was completed by all members of the West Point Classes of 2005 and 2006 at entry (July 2001 and July 2002, respectively). The new cadets completed the hardiness measure as one of a battery of tests administered at the Reception Day testing session. The WCS composite, SAT scores, and cumulative (includes freshman through senior year grades) military program scores were taken from official college records, and then cross-linked with the predictor data.

Three years after graduation from West Point (seven years after completing the hardiness test), Graduate Surveys were sent to the Army e-mail addresses of all Class 2005 and Class 2006 graduates, with surveys to commanders attached. Graduates were asked to complete their own survey, and also forward the Commander Survey to their present commander for completion and electronic submission to researchers

at West Point. Thus, measures of West Point graduate performance were provided by graduates themselves, as well as immediate supervisors.

Results

Table 1 lists the survey items chosen to assess adaptability, and shows how these align with the eight adaptability dimensions of Pulakos et. al.[56]

Table 1. West Point survey items corresponding to adaptability dimensions of Pulakos

Pulakos et. al., *Taxonomy of Adaptability Dimension*	Corresponding West Point Graduate Survey item(s) (Cronbach's alpha = .86 self-ratings; .91 supervisor ratings)
1. Handles emergencies or crisis situations	Acts decisively under pressure[1]
2. Handles work stress	Acts decisively under pressure[1] Uses subordinates' mistakes as an opportunity for teaching them
3. Solves problems creatively	Devises creative solutions to complex problems Thinks 'out-of-the-box' when given an opportunity
4. Deals with uncertain and unpredictable work situations	Accomplishes a mission without specific guidance
5. Learns new work tasks, technologies and procedures	Learns from Non-Commissioned Officers in the unit
6. Demonstrates interpersonal adaptability	Adapts communication style to any audience Tailors leadership skills to individual soldiers
7. Demonstrates cultural adaptability	Works with soldiers from diverse cultural backgrounds
8. Demonstrates physically oriented adaptability	Demonstrates the physical and mental courage to accomplish physically challenging activities

[1] Item is judged to be relevant to two dimensions of adaptive performance. However it is used only once in computing total adaptability score. Adaptability score = sum of responses on all 10 items.

Table 2. Means, standard deviations, and intercorrelations for all study variables (graduating cadets only) (Number of cases shown in parentheses)

	Mean	S.D.	SAT	WCS	COMM	CONT	CHAL	HAR-DY	MPS	Adapt-Self	Adapt-Supv
SAT score	1209.99 (1698)	256.71	1.0								
WCS score	6065.38 (1798)	380.18	.24*** (1698)	1.0							
Commitment	10.79 (1768)	1.96	-.02 (1669)	.05* (1768)	1.0						
Control	10.20 (1762)	1.98	-.06** (1664)	-.10*** (1762)	.50*** (1755)	1.0					
Challenge	8.67 (1761)	2.57	.04 (1664)	.04 (1761)	.17*** (1750)	.02 (1748)	1.0				
Hardiness total	29.69 (1742)	4.49	-.01 (1646)	-.00 (1742)	.75*** (1742)	.67*** (1742)	.66*** (1742)	1.0			
Military Performance Score (MPS)	2.92 (1798)	.42	.00 (1698)	.27*** (1798)	.12*** (1768)	.08** (1762)	-.04 (1761)	.06** (1742)	1.0		
Adaptability–Self rating	45.62 (682)	4.00	-.03 (650)	-.06 (682)	.24*** (670)	.25*** (671)	.09* (670)	.27*** (664)	.05 (682)	1.0	
Adaptability–Supervisor rating	44.42 (132)	5.49	-.11 (126)	.03 (132)	.10 (130)	.36*** (131)	-.09 (131)	.14 (130)	.20* (132)	.23** (128)	1.0

Note: * p < .05;   ** p < .01;   *** p < .001.   Pairwise deletion of missing data; N's for the correlations vary due to missing data for some variables. SAT scores = total Scholastic Aptitude Test achievement scores. WCS (Whole Candidate Score) is a weighted composite of academic, leadership, and physical fitness indicators used in the admission process at West Point. Hardiness ratings were made by West Point cadets from the Classes of 2005 (N=1,186) and 2006 (N=1,197) at entry into academy (July 2001, and July 2002 respectively). Only those cadets from both classes who graduated are included here (N = 1798). The MPS (Military Performance Score) reflects cadets' cumulative grades over four years in military and leadership performance.

Correlations of all predictor and outcome variables are presented in Table 2. Predictors include the three measures obtained at entry to West Point: WCS, total SAT score, and self-ratings on the hardiness facets of commitment, control and challenge.

Criterion variables include: cumulative (as a senior at West Point) Military Program Score (MPS); and self and commander ratings of leader adaptability.

Results reveal that WCS is a significant predictor of military leader performance while at West Point—but has no apparent relation to military performance as a junior Army officer. Commitment is correlated with military performance while a cadet at West Point, and also with later self-ratings of adaptability, but not with commander ratings. Control shows a significant correlation with military performance at West Point, and also correlates with self- and commander ratings of adaptability. Finally, total hardiness scores are correlated with military performance at West Point, and with self-ratings of adaptability.

To follow-up on these correlational findings, hierarchical multiple regressions were performed with SAT scores entered at step 1, WCS at step 2, and the hardiness facets of commitment, control and challenge at step 3. The three outcome variables were examined in three separate regressions: military leader performance as West Point seniors, self-rated leader adaptability as officers three years after graduation, and supervisor-rated leader adaptability, also as officers three years after graduation. Table 3 shows the final model regression results.

In the first regression model predicting cumulative military performance at West Point, the WCS is the strongest predictor (B = .30, p < .001). Commitment (B=.07, p<.01) and control (B=.06, p<.05) also are positive predictors of military performance. SAT scores (B= -.07, p<.01) and hardiness challenge (B= -.06, p<.05) both emerge as negative predictors. The pattern suggests that more intelligent (by SAT scores) and adventurous (challenge) cadets do not perform as well in the conventional military and leadership tasks in the West Point environment. (Overall model F [5, 1659] =35.58, p < .001)

A different pattern emerges in the regression predicting adaptability ratings (self) as Army officers three years after graduation. Here, hardiness facets commitment (B= .16, p<.001) and control (B= .18, p<.001) are positive predictors of adaptability, while SAT, WCS, and challenge scores do not contribute. (Overall model F [5, 628] =13.23, p < .001).

In the final regression model predicting supervisor ratings of adaptability as Army officers, hardiness control is the only significant predictor (B = .47, p < .001). However, the overall model accounts for a larger percentage of variance (R^2 = .18) than any previous model. Traditional predictors of leadership success like the WCS appear unrelated to later performance as adaptable, flexible leaders, either by self- or supervisor ratings. (Overall model F [5, 118] = 5.23, p < .001).

As a further check on these findings, we repeated these regressions but with total hardiness entered in the third step rather than the three hardiness facets. A similar pattern emerged, with total hardiness a significant predictor of military performance at West Point and also later adaptive performance measured by self-report. However total hardiness did not predict supervisor ratings of adaptive performance. Also, all models using the facets of hardiness rather than total hardiness yielded higher R^2 coefficients, accounting for more variance in performance outcomes.

Discussion

Results of this study show that WCS, a measure that reflects a range of high school activities including sports and leadership roles, serves as a good predictor of military and leader performance of cadets while they are at West Point. In addition, SAT scores and hardiness—challenge emerged as *negative* predictors of military performance while at West Point. Like other military service academies, West Point provides a fairly regimented and predictable environment for cadets. In such an environment, cadets who follow the rules and do not question conventional approaches may be rewarded with higher military and leadership performance grades. In contrast, cadets who are more intelligent (SAT scores) and adventurous (hardiness-challenge) may be less inclined to follow conventions and directives, leading to somewhat poorer military leadership grades in this environment. However, the situation appears quite different after graduation, when these cadets are functioning as Army officers in real-world operations. Here, it is psychological hardiness (commitment and control) that predicts adaptable performance, and not the WCS. Traditional predictors of military and leadership performance at West Point appear not to hold in the fast-paced and unpredictable operational environment in which military officers are working today.

The ability to adjust and adapt quickly to rapidly changing conditions is increasingly important in many occupations, especially the military. Military personnel are being deployed more frequently into a range of operational environments, from disaster response and humanitarian assistance, to counterinsurgency and combat. Furthermore, operations are complex and multifaceted, calling for a range of response capabilities and the ability to shift modes quickly as conditions change.

Looking prospectively over a seven year period, we found the hardiness facets of commitment and control in freshman military academy cadets are significant predictors of adaptability as junior officers seven years later, by self-ratings (commitment and

control) and supervisor ratings (control). In the intervening years after hardiness-control was assessed, cadets in this study experienced four years of intensive military and academic training, followed by demanding first assignments as army leaders, often involving overseas deployments. It may be that cadets who begin their academy training with a stronger level of commitment and internal sense of control are better able to capitalize and build on their experiences, even highly stressful ones, building confidence, self-efficacy, and an open learning orientation through the process. Some support for this notion comes from a recent study by Delahaij et al.[57] who found that hardiness influences positive appraisals and coping behaviors toward stressful situations, but that this relation is mediated by coping self-efficacy. Thus, high-hardy persons have stronger self-efficacy beliefs and confidence in their ability to solve problems, leading to proactive coping behaviors in dealing with stressful circumstances.

Another possible explanation for the present findings incorporates a life-span developmental perspective on leader development. In this view, people develop from more self-focused, simple, and egocentric ways of understanding the world, to more broad, complex, and inclusive ones.[58] Several studies have indeed shown that individuals who have progressed to later post-conventional stages possess greater conceptual capacity and perspective, qualities that would seem to be valuable for adjusting and acting in changing circumstances.[59] A study examining Kegan's developmental levels in West Point cadets showed that significant developmental growth occurs over four years at the military academy, and that later developmental stages are associated with better military leadership grades.[60] It may be that new cadets, who are high in hardiness, with their stronger sense of control, commitment, and self-efficacy, are more inclined than low hardy cadets to seek out new experiences and challenges, and to capitalize on the opportunities that the academy training environment provides. This would result in a more rapid developmental growth curve for the high hardy cadets, with increased strategic thinking capacity and adaptability.

A strong sense of control is perhaps especially important for positive, adaptive development in high-risk occupations such as the military, which typically have strict routines and protections in place due to the dangerous nature of the work, and the risks associated with performance failures.[61] In such relatively rule-bound organizational environments, the strongly internal control oriented person is more likely to take initiative to get things done, adjusting and adapting systems and procedures as needed. This balancing between regulation and flexibility is reminiscent of what Grote and colleagues have described at the organizational level as "flexible routines," or rules and patterns of

behavior in high risk organizations that are necessary to guide actions and maintain safety, yet must also be readily adapted when the situation changes, as is often the case in ambiguous and uncertain environments.[62] According to these authors, this flexible routine approach fosters resilience through "loose coupling" in high-risk organizations. Similarly, the high-hardy, high control person makes constructive use of routines and standards, yet is not overly constrained or rule-bound by them, and will find ways to adapt or adjust the rules to fit a changing situation.

There is some evidence that hardiness levels can be increased in training programs for security personnel. Zach, Raviv, and Inbar studied Israeli special service agents participating in a rigorous 9-week selection and training program involving a series of highly demanding physical and mental tests.[63] On average, only 68 percent of candidates complete the course successfully. Their program is unusual in that candidates who fail at a task are given the choice of trying again as a learning opportunity, even though the failing grade cannot be changed. Task failures are discussed by staff and trainees as providing positive learning experiences, rather than as marks of personal incompetence. Research findings showed that hardiness levels not only predicted success in the course, but also significantly increased for trainees by the end of the course. Hardiness-control was the strongest predictor of course success. This suggests that those high in hardiness-control are more likely to benefit from such training. Also this research indicates that training programs can be structured in ways that will increase hardiness, by providing trainees with greater control and using failures as learning opportunities in an overall supportive environment.

STUDY LIMITATIONS

A potential limitation of this study concerns the generalizability of findings beyond the military occupation. Military training academies like West Point provide unusual environments and experiences, and the military occupation itself is not directly comparable to most other occupations. However, the military does provide a valuable context for studying leader performance under highly stressful and demanding conditions. As such, our results provide some promising new leads for understanding the determinants of adaptability under stress. Still, this research will need to be replicated in other, non-military groups.

Conclusions

The present findings should be useful in informing policy and training programs for developing or encouraging higher levels of adaptability in personnel entering high-risk occupations, such as fire, police, and rescue personnel.[64] Rather than trying to train mental agility or adaptability directly, our results suggest that a more successful approach involves providing individuals with challenging tasks and experiences in a supportive organizational context that maximizes and encourages individual initiative and control. Leaders do this, for example, by setting tasks and standards that are achievable, and assuring that workers are given the needed time and resources to succeed. Graduated training programs that begin with simple tasks and progress to more difficult ones, are most successful in building up a sense of mastery and control. Allowing trainees some choice over which tasks to undertake and when also fosters the growth of self-efficacy and a sense of control, which should in turn lead to increased capacity to adapt and adjust in the face of changing conditions.

Our study adds to the growing evidence that non-cognitive or personality factors are important predictors of human performance, in addition to cognitive ones. Another recent study with cadets found that the Big Five personality factors of extraversion and conscientiousness, as well as hardiness predicted academic and military performance.[65]

The present research shows that over a seven-year time frame, hardiness-control is predictive of later adaptability in army officer leaders. In contrast, traditional measures incorporating cognitive abilities did not predict adaptability. Future efforts to understand the determinants of human adaptability should thus focus greater attention on non-cognitive motivational and personality factors that may contribute both directly and indirectly (e.g. in interaction with training approaches) to the development of greater adaptability.

Notes

[1] This report is based in part on the paper Paul T. Bartone, Dennis R. Kelly, and Michael D. Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders: A Prospective Study," *International Journal of Selection and Assessment* 22 (2014), 200-210 (forthcoming).

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Part Two

The Changing Nature of Adult Education—Drivers of Change

Adult education is rapidly changing. Changes are being driven by globalization, brain research, ubiquitous mobile platforms, and Internet connections, morphing teaching techniques, the proliferation of information and educational materials, big data and analytics, budgetary constraints, and changing organizational structures, just to name a few. These drivers are forcing the providers of adult education to transform themselves at every level to consider changes to people, processes, organizations, and technologies concurrently. Some organizations are ignoring the imperative to change while others are content to tweak their systems to make only marginal improvements to present approaches. However, alternative models emerging from the edges of education are pointing to ways to transform the system. The chapters in this section of the book address the drivers of change from the macro-level of higher education as a system, to instructional design, and finally to games and mapping learning to the brain's processes.

The first chapter by Dr. Paulette Robinson provides an overarching review of the disruptions that are rocking the landscape of higher education. While higher education has escaped with only few changes since its earliest inception in ancient Greece, it has been profoundly confronted in the last decade with the disruptions of globalization and modern technologies. Serious questions are being asked by students, government, and industry as to the value of higher education in relation to its current overwhelming costs. Technology has the potential to energize teaching and learning through experiential learning using technologies such as virtual worlds and student maker spaces. Examples of technologies that are emerging for teaching and learning include flipped classrooms, gaming/gamification, virtual worlds, learner analytics, 3D printing, Internet of Things, and wearable computing. Educational business processes that include finances, student services, and teaching are being critically examined through a lens of big data and analytics. Higher education has the opportunity for the first time to view itself from an end-to-end perspective across silos, not only to measure what is working, but also to change, improve, and transform. As a result of the drivers for change, higher education must closely examine its business models, and often transform them. One possibility, a brokerage model, would stand outside of higher education and grant credentials based on achievement of competencies required by employers, however those competencies were acquired.

In the next chapter, Dr. Elaine Raybourn describes transmedia learning, an instructional design approach adapted from transmedia storytelling used by the entertainment industry. The instructional interactions revolve around stories. Her example of a U.S. Marine squad's war story recorded in a machinima (movie created in a virtual world) captured in a profound way the emotional impact of traumatic combat experience. The soldiers' metacognitive reflections related to the experience wove together a mixture of learning from successes to mistakes and feelings of guilt. The power of transmedia stories with the accompanying reflections demonstrates the power of learning that can be achieved. Social media, games, role playing, and other activities can be developed around the story to immerse the learners deeper into the experience and enhance the learning experience. This new design approach views learning outcomes within a learning ecosystem of tools that are focused on a narrative. It meets adult learners where they interact with information on a daily basis, making the approach more relevant to the students.

Dr. Shane Gallagher, in the last chapter of this section, takes a deeper dive into design of games, cognitive functions, and the indicators for cognitive adaptability within the brain. He uses commercial games, in this case *Portal2*, to analyze game playing and its effect in enhancing cognitive adaptability. At the granular level of the brain processes, learning can be quantified. Educators can know what approach works for learning at the most elemental level, the brain. For Dr. Gallagher, the next steps are to apply a rubric to the game and micro tasks within the game, to verify empirically activities that facilitate learning at the level of the brain. If we know that a game will affect the brain for particular skills/competencies, that verification can be used to select activities with the largest impact in desired skills/competencies for particular jobs.

All three chapters in this section describe the potential for new approaches for adult education that are fostered by technology. These approaches are substantially different than those being used in Professional Military Education (PME) today. But PME organizations do not exist in a vacuum. The disruptions that are impacting higher education and adult education inevitably will affect PME as well—and already are in many cases. These disruptions are also affecting the complex and uncertain environments that military officers and non-commissioned officers must operate within, one that laced with technology and embedded in global contexts. Whether these disruptions are viewed from the macro organizational-level or the micro-level of the brain, these emerging capabilities all have the potential to transform PME in profound ways.

Chapter 5

Higher Education 2020: A Landscape Rocked by Disruption

Paulette Robinson

The models of higher education that marched triumphantly across the globe in the second half of the 20th century are broken. Just as globalization and technology have transformed other huge sectors of the economy in the past 20 years, in the next 20 years universities face transformation.
—*Michael Barder, Katelyn Donnely, and Saad Rizvi*[1]

One only has to pick up a newspaper or view popular media to see articles that describe the disruptions that are rocking higher education. Titles like *Higher Education Is On The Edge Of The Crevasse*,[2] *Revolution Hits the Universities*,[3] *Student Debt Reaches Over One Trillion Dollars*,[4] *Higher Education: Not What it Used to Be*,[5] *Is the Internet Sending Higher Education the Way of the Newspaper Industry?*[6] *MOOCs: End of higher education as we know it?*[7] have permeated the media. It is now a common refrain to describe the system as in distress.

The landscape of higher education is being disrupted by a variety of factors. Globalization, various technologies, and budgetary pressures serve as the major forces driving change and transformation. As a result of these forces, every aspect of higher education is being pushed to change faster than it can absorb. In many higher education institutions, mere transition and tweaking the system will no longer suffice. To provide effective service, and in some case to survive, most institutions of higher education will need to transform.

This chapter addresses the major disruptors pummeling higher education: globalization, technology, skepticism about the value of higher education, and data analytics. While the list is not exhaustive, the chapter provides examples of disruptive technologies that are having current impacts—mobile platforms, Massive Open Online Courses (MOOCs), gaming and gamification—and technologies that are

beginning to have an impact, but will not be felt in a major way for three to five years—learner analytics, 3D printing, Internet of Things, and wearable technologies.[8] Higher education has responded in a variety of ways to these pressures, including the new teaching models are being reinvented or created as a result of technology. Big data and new analytical techniques are being adopted to enable more comprehensive views of the overall business of higher education to include financial information, student services, and teaching. These analytical views can guide a university's focus and resources. As a result of these major disruptions, higher education is being pushed to make shifts in most of the business models that underpin it.

The Globalization of Higher Education

Globalization[9] has been accelerated through rapid, inexpensive means of communication in the past two decades. The Internet, mobile technology, and social media, among many others, have created a virtual village center with globally dispersed community members. Higher education, whose business resolves around ideas, has been profoundly affected. As a report by the Organization for Economic Co-operation and Development noted,

> *Mobility is not just about meeting demand for professional workers. Its importance for innovation stems from its contribution to creating and diffusing knowledge. Once in another country, people transmit their know-how and skills. In the workplace, knowledge spreads to colleagues, especially those in close contact. Knowledge also spills over to people and organizations nearby and can contribute to the emergence of local concentrations of activity. Mobile talent also acts as a vital complement to the transfer of knowledge through flows of goods and capital across borders.[10]*

The mobile talent pool is now the focus of a global competition for higher education's best students, faculty, researchers, and administrators. These talented people will drive future innovation and economic growth. One key aspect of this competition is graduate students:

> *The battle for the knowledge of the future lies in recruiting postgraduate students. If you assume that we're in the middle of a knowledge economy, then you need to ask the question 'What will produce this knowledge? Where does*

> *it come from?' One of the biggest contributors to knowledge is universities…*
> *with much of the work being done by researchers and their teams–and their*
> *teams are PhD students.*[11]

While U.S. universities still lead the world in attracting international students and faculty, they are no longer keeping pace with growth elsewhere. Immigration restrictions, reductions in research budgets, challenges to the tenure system, limited salary increases and advancements, as well as shrinking budgets are all playing a part in threatening U.S. leadership on the global stage.

> *During the 1999-2005 period…, for example, overseas enrollments in the*
> *United States grew by 17 percent. Foreign enrollment in British universities*
> *grew by 29 percent during the same interval, in Australia by 42 percent, in*
> *Germany by 46 percent, and in France by 81 percent.*[12]

Faculty and administrators are also being recruited world-wide. This is particularly true of an academic elite, where the most talented researchers "are being systematically funneled into a small number of countries."[13] This has prompted some of the elite universities in the United States to craft approaches to international programs and recruit the best and the brightest. Yet questions still remain about how the future of the economy will look and how the United States will interact with its competitors.

Technology Disruptors

The combination of globalization and technology has a substantial multiplying effect in disrupting higher education. The technology disruptions in this section describe current as well as technologies that will have an impact within the next three-to-five years.[14] These major technology disruptions are having a devastating effect on traditional higher education. Some say the effect is comparable to the disruptions that hit the newspapers.[15]

While online education is not a new disruption, it has reached a tipping point. The *2013 Horizon Report for Higher Education*[16] predicts that within the next decade, various technologies will become normal in higher education. Mobile platforms, MOOCs, gaming and gamification, virtual worlds, learner analytics, 3D printing, the Internet of Things, and wearable computing will all impact how education is provided and how students learn. These new instructional platforms can no longer be ignored. Quality instruction

beyond the traditional classroom model is readily available and often free. Details of these technologies and responses by higher education are described below.

MOBILE PLATFORMS

The Internet provides an untethered means of access to mobile platforms. Mobile phones are ubiquitous and global. They offer ever-increasing magnitudes of computing power, enabling a degree of access to data unheard of only a few years ago. The global mobile penetration is expected to reach approximately 92 percent by the end of 2012, with the subscriber base forecasted to increase at a Compounded Annual Growth Rate of 7.3 percent between 2011 and 2016, to reach nearly 8.5 billion by the end of 2016.[17] The Internet is the main source of information in the world and the mobile phone is the primary computing connection to that information. Higher education must develop effective education models that serve students who use mobile devices to acquire information to answer questions, inform decisions, and acquire services.

Educational approaches that use mobile platforms not only include information delivery, but must also include student engagement through activities in and out of the classroom. Teaching models need to include classroom activities (e.g., polling, small group discovery, sensor data from phone, etc.), blended learning (both classroom and distance learning), and totally online, synchronous and asynchronous courses. For example, tablet computers, while not new, have become an educational phenomenon with the *iPad*, *Kindle Fire*, *Nook*, *Microsoft Surface* and various *Android* platforms, among others. "Tables have gained traction in education because users can seamlessly load sets of apps and content of their choosing making the tablet itself a portable personalized learning environment."[18] These devices have been enabled through an astonishing growth in inexpensive or free software applications ("apps").

Apps offer the ability to access and interact with a range of educational materials that include reading e-books, watching videos, collaborating with other students, submitting assignments at anytime from anywhere. For the education sector, standalone mobile learning applications are proliferating at an astonishing rate. As of August 2012, the iTunes App store offered 53,882 apps in the education category, and as of April 2013, the total number of Android platform apps (available from the Android Market) was 43,667.[19] Sensors, augmented reality, as well as gesture-based (e.g., Kinect), Google Glass, and neuro-input interfaces (e.g., Emotiv, InteraXon, etc.) already exist. They are becoming part of enriched multi-dimensional learning environments.

The initial reaction of most faculty to the use of mobile platforms in higher education was to ban the devices in their classrooms. This reaction has somewhat subsided, but still exists. In an effort to meet students where they access information and informally learn, universities have created campus-wide WiFi networks, issued mobile devices to faculty, encouraged "bring your own device" (BYOD) environments and explored creative ways to use these devices in and out of the classroom.

MASSIVE OPEN ONLINE COURSES

MOOCs have blasted on to the higher education scene, posing a disruption to higher education and pushing online education over a tipping point to fundamentally new ways of doing business.[20] MOOCs often have huge enrollments (median 33,000 students) and are offered free of charge.[21] The term MOOC was coined in 2008 with a course offered by the University of Manitoba. It gained its current momentum when Stanford launched three courses in 2011 with 100,000 each on the *Coursera* open source platform. *Coursera* is the dominant platform to date with over 3,350,000 students, 373 courses, and 62 universities participants, and the numbers are growing.[22] Since then, the EdX platform was developed by Massachusetts Institutes of Technology in 2012. The initiative was initially joined by Harvard and University of California, Berkeley. It now includes the University of Texas system, Wellesley College, and Georgetown University. Other MOOCs that universities are using include: *Udemy*, *Udacity*, Stanford's new *NovoEd*, among others. MOOCs are not just a U.S. phenomenon. Examples of international MOOCs include: *FutureLearn* in the United Kingdom, *MOOC.ca* in Canada, *Iversity* in Germany, and *OpenUpEd* created by the European Association of Distance Learning.[23]

New instructional models and best practices are also being developed and applied to MOOC delivery. The Connectivist design model is the underlying basis for MOOC instructional platforms. The model uses the major activities of aggregation, remixing, repurposing, and feeling forward.[24] In a Connectivist approach, knowledge is not an endpoint, but an ongoing engagement: It is created by the interactions and relationships built between the students. Students create rather than consume knowledge. Materials for MOOCs are drawn from cloud–based services such as TED and YouTube videos, wikispaces, blogs, Google hangouts, and Facebook. As is the case with all new technologies, many MOOC courses offered by traditional universities take on the traditional form of the lecture (video), online discussion, quiz, and written paper model, and do not incorporate the more radical connectivist model envisioned by Downes and Seimens.[25]

These are still the early days. Creating the tools and mechanisms to promote iterative feedback and skill generation that is personal, facilitates group learning, and project-based will be essential. MOOCs hold the potential for personalized learning on a global scale because only a connection is needed to receive the instruction. Innovation has just begun and holds promise to be a major revolutionary force for creating the skills needed for a rapidly changing world.

Controversy has erupted across and within universities regarding the business model and sustainability of MOOCs.[26] Free courses from renowned professors at major universities have been the primary reason for drawing students to these courses. Similarly, students are not tied into a program. They can explore topics of interest without tuition or debt. While an admirable practice, universities are struggling to monetize the effort beyond a marketing opportunity for university programs and a massive course feedback mechanism. Some are exploring credit-based courses where students pay tuition for the course. Students can come from various universities and credit is transferred within articulation agreements. Two groups currently evaluate MOOCs: The American Council on Education operates a credit-recommendation service that evaluates individual courses. And, as a possible first step, *Coursera* offers Signature Track,[27] a fee-based system of validating completion of one of its MOOCs. *Coursera* has also launched a Career Services option where industry pays a fee for verified students.[28]

The controversy does not stop with the administrators. Faculty have been raising a red flag about quality, workload, and administrative decisionmaking.[29] It is interesting that over the history of higher education, the argument against change has been quality.[30] MOOCs, by their nature, require little or no faculty involvement once the MOOC is designed and implemented. Some faculty interact with students more than others. It is difficult for faculty to imagine how they can interact with 35,000+ students in a meaningful way. Yet it has become more important than ever to create quality and best teaching practices in a MOOC environment. The best online classes are a team effort where expertise is leveraged. The roles for faculty-designer, subject-matter expert, and education technologist will need to be created even though this is uncommon in higher education. Because MOOCs are team efforts with a number of required skills, faculty cannot be dropped into the task without support and training if organizations hope to succeed in the environment. With team approaches and faculty teaching other classes, the impact of MOOC on faculty workloads is unclear. How the university administration acknowledges teaching in a MOOC is critical to

how it is viewed in terms of rewards, workload, and support. Stamenka Uvalic-Trumbic has argued that MOOCs dilute the university brand and that agreements to offer MOOCs are made without careful considerations with the faculty.[31] This controversy parallels the conflicts that have been erupting around distance learning for more than 20 years. The focus on MOOCs as a method of delivery is the only change.

GAMING AND GAMIFICATION

Games are engaging and easily accessible in multiple platforms. This ability to interact with games anywhere anytime has enhanced and promoted play as a way to learn. Games offer challenges and iterative, immediate feedback. Research has shown that playing video games helps stimulate dopamine in the brain, a chemical that "provokes learning by reinforcing connections and communications."[32] Game players exhibit persistence, risk-taking, attention to detail, and problem solving skills. There is also an increase in critical thinking. Prensky suggests, "Digital games, whether computer, game console, or handheld-based, are characterized by rules, goals and objectives, outcomes & feedback, conflict/competition/challenge/opposition, interaction, and representation of story." Klopfer states games are "Purposeful, goal-oriented, rule-based activity that the players perceive as fun."[33] These are all things educators seek to inspire in the classroom. Real world problems posed in simulations give students the opportunity to apply concepts to authentic situations. Jane McGonigal posits that gaming can make a better world. Effectively done simulations can demonstrate the power of games to mimic pressing issues, requiring students use higher-level thinking skills to apply solutions from their area of study.

Examples of games being used in higher education include *10 Downing Street* (IE Business School Madrid), *Global Social Problems*, *Local Action* and *Social Networks for Change* (St. Edward's University), *SimArchitect* (IBM Center for Advanced Learning) and *VitalSims*[34] (University of Minnesota School of Nursing). Why gaming in higher education? As McGonigal notes,

> *Currently there are more than half a billion people worldwide playing computer and videogames at least an hour a day—and 183 million in the U.S. alone. The younger you are, the more likely you are to be a gamer—99 percent of boys under 18 and 94 percent of girls under 18 report playing videogames regularly. The average young person racks up 10,000 hours of gaming by the age of 21—or 24 hours less than they*

spend in a classroom for all of middle and high school if they have perfect attendance. 5 million gamers in the U.S., in fact, are spending more than 40 hours a week playing games—the equivalent of a full time job![35]

A recent form of gaming spurred by mobile capabilities has erupted onto the education horizon in the form of gamification.

Gamification is the application of game elements in nongaming situations, often to motivate or influence behavior… In the academe, gamification typically employs elements such as points, badges, or progress bars to engage or motivate students in the learning process. Whereas building a full-scale game requires the design and construction of a holistic, systematic environment to house the project, successful gamification can involve no more than the employment of a few feedback or reward elements.[36]

Gamification is being used broadly in business for skills training and in marketing to engage customers in the products/services of the company. This type of game is connected to robust data collection that not only serves to prove mastery of a skill, competency, or actions by a consumer, it also gives feedback to the player of the game.

In higher education, gamification is starting to show promise. Pepperdine University's business school is using a gamification tool, *Veri*. Temple University's The Fox School of Business is using Wordpress and its gamification plugins in their Social Media Innovation course. Penn State University's economics course ties the content to gamification in, "You Want to Be a Millionaire." The impact and utility of these games is of such magnitude that the *2013 Horizon Report* predicts broad adoption of games and gamification in higher education in the next two to three years.[37]

VIRTUAL WORLDS

Virtual worlds are communities that represent three-dimensional (3D) immersive spaces. The most popular free virtual world is *Second Life*, and other examples of virtual worlds include *Protosphere*, *Metaverse*, *OpenSim*, *Olive*, *Unity3D*, and *Wonderland*. The avatar in a virtual world is a representation of the participant. It can walk, run, or fly, inside the world, interacting with the environment, other participants, and objects. Graphics can be crafted or imported. Object actions can be scripted in a

language dictated by the world. The worlds can be modeled after real-world settings or created as imaginary fantasy worlds. Communication is managed through voice and text chat. In some virtual worlds, websites, notes, whiteboards, and collaborative projects can all be placed onto a prim (a concretized 'script'). All the tools enhance the engagement and interactions of the participants.

Virtual worlds can be closed to the public behind a firewall or open for any and all to participant. *Second Life*, while proprietary, is free to use as an avatar. If the user wants to design and build a virtual space, they pay an annual license fee. What has been unique about *Second Life* is that the majority of the content within it has been created by users. Economies have been created and businesses have sprung up selling anything from land and houses to designer shoes and suits to tarot cards. Communities have grown up around special themes and created the objects to support it. It is a world that is like a blank slate waiting to be written on. Psychologists Bailenson and Bloscovich discuss in their book, *Infinite Reality*, how the user's brain interprets the avatars actions "in world" as real.[38] In other words, the participants believe themselves to be in the world interacting with others.

This power of immersion in virtual worlds offers a rich environment for education. Some of the most creative uses of virtual worlds in education come from educators themselves. In addition to creating classrooms for learning sessions, educators have students create objects in the environment as part of class projects. The students model and analyze places, build theaters and give plays, create and display art, design simulations and games, create analytics to measure participation, and perform social science research. Students also role-play situations in settings that simulate particular problems. Virtual worlds are the places where students can take action.

LEARNER ANALYTICS

Mechanisms in higher education for understanding student learning typically are course-based and determined by a grading structure. Grading for students is often an inconsistent black box. Rarely are low-stakes formative assessments used, nor is learning tailored to the individual student. Faculty vary on how they grade, how often they give feedback, and the connection between the assessment and the overall learning outcomes of the course. Students in this process, however, often do not know how they are doing in their learning.

Learner analytics "collects and analyzes the 'digital breadcrumbs' that students leave as they interact with various computer systems to look for correlations between

those activities and learning outcomes."[39] The data can be gathered to assist students immediately in a course with feedback on their progress in a course. The data can also give students feedback on their program of study. Austin Peay State University academic advisors use *Degree Compass*, a software program that applies predictive analytic techniques to help students decide which courses they will need to complete their degree as well as the courses they are likely to be successful.[40] Saddleback Community College uses another similar program, the *Service-Oriented Higher Education Recommendation Personalization Assistant* (SHERPA).[41] The system compiles detailed profiles on each student, recording information about work schedules, experiences with professors, and other personal information throughout their time at the university. With this information, recommendations are created for students about time management, course selection, and other factors that contribute to the students' success in their studies.

Other programs interact with the students directly and continuously. *Persistence Plus* is a mobile app designed by Kauffman Labs Education Ventures. It is rooted in behavioral science and addresses the lack of proactive support of students on their way to graduation through the platform Small Nudges.[42] The program uses mobile technology and student data to produce insights into students' progress, their progress in relation to their team, and references to external resources and strategies that encourage success. *CourseSmart*, a digital textbook provider with five other textbook partners, launched an analytics program in 2012 that tracks a students' activity as they interact with online texts and provides professors with an engagement score for a particular text.[43]

The *2013 Horizon Report* suggests this ability to give students real-time feedback on their progress through their higher education programs will be more ubiquitous in the next two to three years.[44] The capabilities are still being developed for gathering data in a common database from diverse siloed sources, devising analytics to provide meaningful information to the students, and offering portals with dashboards for students to view information.

3D PRINTING

3D Printing or additive manufacturing erupted onto the scene in a big way in 2012-13. A 3D printer enables the creation of 3D objects from digital models. The first working model was created in 1984 by Chuck Hall.[45] It was slow to catch on because of the expense of the "printers" and the lack of suitable manufacturing mate-

rials beyond prototyping. This limited the spread to industrial Research and Development components. Today, *Maker-bot*, an open source 3D printer, provides a low-cost option (less than $1,000 in some cases) that can be programmed and continuously adjusted. It uses simple inexpensive plastics as the printing materials. *Maker-bot* has made 3D printing affordable for higher education.[46]

The exciting possibilities are only limited by the capabilities of the printer devices and the materials that are available. We have been amazed by the printing of body parts, clothing, parts for machinery, even guns, have been printed. Wide-spread repositories of 3D models such as Thing-a-verse, Google 3D Warehouse, and company diagrams, as well as inexpensive 3D scanner capability, simple editing tools, cheap file storage, as well as high-speed Internet access and delivery have all provided the necessary confluence for design success, the "what" of 3D printing.

3D printing enables innovation and experimentation in various additive manufacturing techniques. Students can become designers, inventors, and "makers." Certain fields of study in higher education lend themselves to the use of 3D printing such as architecture, the fine arts, biomedicine, and engineering. In these fields, where prototyping is part of the development and learning process, 3D printing allows students to see their designs materialize quickly, easily, and relatively inexpensively. Students are able to adjust their working models through direct interaction with the object "printed." It supports a line of research in materials that serves as the "ink" to build objects. It is also being used to create spare parts for laboratories.

3D printing in higher education is growing with the rapid progression portrayed in the media.[47] For example, Purdue University's "Ideas in Innovation Laboratory" has several "Object 3D" printers. Victoria University of Wellington, Schools of Architecture and Design held a 3D model workshop with a range of 3D digital fabrication and other modeling equipment. The University of Mary Washington hosts "The ThinkLab," a space for hand-on creative inquiry and learning using a variety of high-tech tools that include a 3D printer. At Harvard, computer scientists developed add-on software that enables printing of 3D action figures from computer animation files, showing how easy it is to adapt 3D printing to available technology. Other universities have installed 3D printers in innovative maker centers to experiment with 3D printing and its applications to the curriculum.

INTERNET OF THINGS

The Internet of Things is the network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment.[48]

The Internet of Things (IoT) architecture is still being built. Control systems for industry have communicated via the Internet for a number of years in power plants, oil lines, chemical plants, among others. The IoT expands this to include about everything you can think of being connected to the Internet: personal devices (e.g., security systems, cars, appliances, health devices, and clothing), and sensors (e.g., electric company, temperature, cameras, and water quality). IoT would not be possible without the development of a number of recent technical capabilities that include: IPv6[49] (more Internet addresses are available so each object can have an address), cloud computing, electronic devices that are small and Internet enabled, mobile technology advances, and big data capabilities.

For education, this capability is emerging, but will have a profound effect within the next three-to-five years.[50] The interaction with an object of study can be continuously monitored and data reported without intervention from the observer. The new research challenges become the best sensor(s) to monitor the object or condition, the database construction to receive the data, and the analytics that can make sense of the data. Art can take on new dimensions with augmented reality that conveys a broader statement of the artist's intent for the work using augmented video and additional web-enhanced information links. The piece of art can have sensors and cameras to "observe" the responses and reactions of anyone viewing it. The viewer of the art can contribute to the experience of it, by adding information through mobile technology to blogs suggested by the art work. Language learning can be augmented by labels or tags that float above objects in the language of interest with audio that plays the correct pronunciation. Students can create "experiences" for their educational projects that go beyond a written paper and immerse the faculty and other students into a collection of media, text, and resources.

WEARABLE COMPUTING

An interesting subset of the IoT is wearable computing. The term covers a wide-range of possibilities that all include something worn. Rather than being an object of study separate from us, the sensors become about us. Wearable computing includes various types of sensors (e.g., health, temperature, and chemical), sensory integration to help us see better, neuro headsets, behavioral modeling, service management, mobile and smart phones, electronic textiles, and fashion design.

Fashion design and fashion education is about to take an interesting leap into the future. Fashion design is becoming a combination of fashion design, technology, and data collection. Clothing will serve us in new ways beyond covering our bodies in socially appealing wrappings. Education in fashion design will not only be artistic, but also multidisciplinary. In that it is a "true fusion of fashion and technology. From manipulating nanoparticles in cotton, to incorporating knit antennas and transistors into garments, the computational fashion industry is reimagining how we use clothing in our everyday lives."[51] One of the most exciting new wearable technologies is Google Glass.[52] Google Glass is a hands-free augmented reality device that connects to an Android smartphone via WiFi. Each of the headsets includes its own camera. It provides a heads-up display that is activated by tapping the frames or tilting your head up. With the voice command, "OK," the functional capabilities of the Glass are available. With Google Glass you can, with voice commands, take and share pictures as well as livestream and share video, get directions which are displayed in the Glass, make a call, and send a message. Archives of pictures, videos, searches, etc. are accessed by swiping the side of the Glass side frames.

Jcotnoir,[53] a blogger from Worchester Polytechnic Institute's Teaching for Technology and Learning, has suggested some possible uses for Google Glass in higher education. He suggests that the Glass can be used for: 1) capturing lectures from a first person perspective; 2) recording and sharing data and reactions in laboratory settings; 3) bringing up notes while maintaining eye contact; and 4) enabling live video chat that allows an instructor to give a lecture from anywhere through live video chats.

Wearable computer gadgets that monitor health are proliferating at an astounding rate. Personal monitors for exercise (distance, time, speed, heart rate), sleep, and glucose levels are measured with small unobtrusive devices attached to or embedded in clothing that transmit to mobile devices. Mobile apps are being developed to gather all sorts of personal data that can be then transmitted to doctors via the Internet. Wellness is becoming the focus of health care over treating disease. These monitoring devices will in the future determine health care approaches and insurance rates. Personal health portals will record all pertinent monitored health care information. Individuals will have control of all their health care data flipping the collector/maintainer of personal health records to the individual rather than a score of often unrelated doctor's offices.

For education, personal health data can help an educational organization encourage students individually to balance the stresses of life, monitor and isolate in-

stances of epidemics on campus, guide health care support personnel on campus, among others. The data collected could be aggregated and used in health research. Baselines for the data would be available as well as trends over time. Of course, this presupposes that students choose to share their data with researchers.

Taken together, all of these issues mean that higher education is being bombarded by technology disruptions from multiple directions. Each disruption adds a challenge to cherished traditional approaches within higher education. Teaching has been dominated by the faculty expert lecturing in front of the class with discussion questions sprinkled in to engage students. The technologies described above are but a few examples pushing higher education into new frontiers.

Money Versus Value

One of the big questions is whether new technologies will lower the cost of education and create more value for the various higher education stakeholders. Cost has become one of the drivers contributing to global disruptions within higher education. Higher education has encountered unprecedented growth in budgets, university total salary growth, administrative bloat, expensive research facilities, and a long list of student services. Supporting the complete package of a multi-dimensional university has become untenable.[54]

Moody's released an outlook report that suggests a grim future for higher education credit conditions in 2013-2014.[55] Moody's attributes this negative outlook to five key factors. First, depressed family incomes and household net worth have suppressed net tuition growth. Second, all revenue sources are strained, and financial diversity no longer helps colleges as much as it once did. Third, rising student debt and default rates have hurt perceptions of the value of a diploma. Fourth, public and political scrutiny has increased the risk of more regulation. And finally, colleges face a challenging future without strong leadership and better governance. Government funding of higher education has also dropped significantly. "The national average per student FTE (full time equivalent) funding for 2012 is lower than 2011 by 8.9 percent, and 23.0 percent lower than 2007."[56] With the deep Great Recession and reduced tax revenue, local and state governments have had to make hard decisions on education funding. This situation is exacerbated by large cuts to research funding by the federal government.[57] With funding sources collapsing on all fronts, higher education has been scrambling to find resources through higher tuition, philanthropy, and partnerships with industry. But many of these options also are closing. The result is that "a

substantial shift of responsibility for financing public higher education toward net tuition (from less than 30 percent to nearly 50 percent) in a dozen years is a significant change for American higher education."[58]

The exponential rise in tuition rates has left students hopelessly in debt at graduation.[59] "Between 2000/01 and 2010/11, prices for undergraduate tuition, room and board at public institutions rose 42 percent, and prices at private, not-for-profit institutions rose 31 percent after adjustment for inflation."[60] As a country, the total amount of student debt has exceeded a trillion dollars; surpassing the national credit card debt.[61] "Students are already borrowing about $113 billion a year, more than twice as much as a decade ago, and student debt now tops $1 trillion." The U.S. Government accounts for nearly 90 percent of all student loans, and the Congressional Budget Office estimates that students will take out $1.4 trillion in new federal loans over the next decade, further exacerbating the problem."[62]

In the midst of these growing costs, people are seriously questioning the value students are receiving from their university degrees. "For young college graduates, the unemployment rate is 8.8 percent (compared with 5.7 percent in 2007) and the underemployment rate is 18.3 percent (compared with 9.9 percent in 2007)."[63] While students with engineering degrees fair better than most, there are critical skills that universities overall are failing to produce.[64] Students are graduating without critical thinking, problem solving, or communication skills. They lack the creative and innovative abilities needed to invent the future. Companies are finding that students are not prepared to meet the skill requirements for their jobs. Students, business, and government are asking: what are we getting for the money we are paying for higher education? Are these stakeholders getting a good return on investment? More often than not, the answer is coming back a resounding, "No!"

New Teaching Models

Higher education has begun to reinvent itself in response to the disruptions of globalization, technology and questions of its value. This transformation is most evident in the new teaching methods that are emerging. While there is an explosion of new ways to approach teaching, just a few are highlighted here: new forms of experiential learning, flipped classrooms, and students as "makers."

NEW FORMS OF EXPERIENTIAL LEARNING

Experiential learning is learning through reflection in doing. It has its roots in the education philosopher, John Dewey.[65] It involves the learner making meaning of a concept through grounding it in an experience. David Kolb took Dewey's learning by doing and in 1984 published his experiential learning theory that included an iterative four-stage cycle of learning: 1) concrete experience (doing); 2) reflective observation (reviewing and considering); 3) abstract conceptualization (making meaning); and 4) active experimentation (application of ideas to other activities). Students can enter the cycle at any point. From the learner perspective, there are four conditions the learner must have:

- The learner must be willing to be actively involved in the experience
- The learner must be able to reflect on the experience
- The learner must possess and use analytical skills to conceptualize the experience
- The learner must possess decision making and problem solving skills in order to use the new ideas gained from the experience.[66]

Learning by doing in higher education is not new. Educational programs (e.g., service learning, cooperative learning, learning abroad, clinical internships, etc.) and educational methods in classrooms (problem-based learning, case studies, simulations, etc.) have recognized the power of experiential learning. What is new are the new technological capabilities and environments where learning by doing can take place. An example will be used to explain briefly how this can work in practice.

Students no longer have to be physically at a location to experience an event. Virtual worlds can provide a robust context for students to participate in past, current, and even future events through games, simulations, modeling, and role, playing. This gives students an opportunity to be immersed in the complex context with authentic problems and to solve them with other team members in a low-risk setting. The settings can be augmented by flows of live streaming data from sensors. Faculty can monitor progress, ask prompting questions, and review actions with students using recordings of the interactions in the virtual world after the event for analysis and feedback.

FLIPPED CLASSROOMS

Flipped classrooms are courses where students are given a rich set of information prior to class that can include multimedia, websites, and readings. The informa-

tion delivery portion of the course is completed by the students before they come to class. This relieves the faculty from lecturing in the classroom. Some faculty start their class by asking if the students have any questions about the materials provided for them. The next step is an activity that is designed to give the students the opportunity to apply the course information in some way. The last portion of the class is a discussion/facilitation of the results of the student activity. This method gives the students a number of ways to process the new information, particularly reading/watching information about the course topic, questioning the faculty on points they do not understand, working with the information to apply it to a problem or role, and processing the class activity as a group where misconceptions can be corrected. All of these approaches to course material are designed to achieve the learning outcomes. They are at a low assessment risk and encourage the students to explore and be iterative in their approach to learning. Mistakes and misunderstandings of the material are corrected in the context of the course. In this method, the students are responsible for their own learning. Students learn new conceptual knowledge best by connecting it with previous knowledge and apply the knowledge to a real-world problem. The application of the knowledge makes it relevant to them.[67]

Faculty can find rich multimedia materials that are available across the Internet. The Khan Academy primarily focuses on K-12, but has a number of videos available for higher education.[68] *YouTube* has a selection of videos that are specific to higher education.[69] *TED.com* has an incredible collection of videos that can be used in higher education and has launched an education channel that directly applies.[70] Other channels archive relevant videos on various television programming websites and conference presentations are another source of video. Infographics, photos, websites with collections of materials are also all easily available. The key is to keep the course learning outcomes and objectives in mind and determine which materials will prepare students to apply the information and achieve the learning outcomes.

STUDENTS AS MAKERS

The maker movement is rooted in do-it-yourself and tinkering cultures that are empowered by the Internet and access to technology. Today the manufacturing process can be unbundled.[71] Design can be accomplished with simple, readily accessed 3D design tools. Once the design has been perfected, the designer can contract with a cloud manufacturing firm to take the design and either produce it or ship the parts for assembly in another location. Distribution can be managed by yet another firm.

Maker locations are springing up across the country equipped with tools and capabilities to create anything from a craft item to an electronic device or robot. A similar application is important for higher education.

Daniel Pink suggests that we have moved out of the Information Age to the Conceptual Age, an age that requires six types of thinking: First, design: The combination of utility and significance. Second, story: The essence of persuasion, communication, and self-understanding has become the ability to fashion a compelling narrative." Third, symphony: "Synthesis and boundary," "crossing boundaries," "disparate pieces can be combined "into an arresting whole" and inventive juxtaposition. Fourth, empathy, which "allows us to see the other side of an argument." Fifth, play, is the combination of games, humor and joyfulness. Finally, meaning, which is "our fundamental drive, the motivation engine that powers human existence is the pursuit of meaning."[72] To be a maker gives the students the opportunity to practice several of Pink's types of thinking. The students create a new way learning that directly benefits them and higher education teaching.

In higher education, makerspaces become "used by students, faculty, and staff. Makerspaces have become arenas for informal, project-driven, self-directed learning, providing workspace to tinker, try out solutions, and hear input from colleagues with similar interests."[73] The spaces support invention and an environment for individuals who learn best by doing. Students are empowered to take control of their own learning. They define as well as design their projects. A number of universities have created makerspaces, including University of Mary Washington has created ThinkLab, Rutgers has the Headquarters, FabLab at MIT, Case Western Reserve University has created a seven-story building with 50,000 feet of space. Wheaton College, has the WHALE lab (Wheaton Autonomous Learning Lab) "an interdisciplinary makerspace where students embroider, solder, weld, sculpt, or otherwise design and manufacture creative projects. The emphasis is on community-provided mutual assistance."[74]

Georgia Tech has created an Invention Studio that can serve as a model for "maker" education in higher education.

> *The makerspace is equipped with 3D printers, laser cutters, a waterjet cutter, an injection molder, a thermoformer, various milling devices, a meeting space, a lounge, and more. Dr. Forest writes that "these facilities, infrastructure, and cultural transformation are demonstrating the value and sustainability of hands-on design/build to stimulate innovation, creativity,*

*and entrepreneurship in engineering undergraduates." Over 30 companies
have donated to build and support the Invention Studio.*[75]

Originally, the Georgia Tech faculty, who created the makerspace, were going to use it as a space to create an engineering capstone project. This original intent has changed and expanded. Students are using the space to also create their own projects, extending the application of their learning beyond the curriculum.

Higher education is just beginning to experiment with makerspaces and their use in the curriculum, teaching and learning. It will be interesting to see how a broader university community will begin to use makerspaces for assignments and projects and it will be exciting to see the shape multi-disciplinary projects take to instill and encourage creative design and innovation.

Accountability and Big Data

Teaching and technology have been recently linked to accountability and big data. In the traditional university, information was in silos and not captured across the enterprise. The paper-based system made it virtually impossible to get a complete picture of any process. Faculty taught their lectures isolated in the classroom with each instance of the course a unique performance. Libraries and librarians were keepers of the printed word. The library collection was the central repository of knowledge on the campus. All this changed with the computer and the digital capabilities for data that came with it. This has also changed the dynamic across the campus.[76]

Colleges and universities boast neither common language about costs and prices nor well-established metrics for evaluating how resources are used within their institutions or across the higher education landscape.[77] The digital capabilities of a university and big data have given higher education for the first time the ability to see if it is succeeding and where there is work to be done. It allows higher education to separate what is essential and what is accidental. It gives a baseline from which to improve iteratively.

Big data can begin to prove its worth with the business of the university. Data can assist in creating efficiencies in business processes and procedures, procurement, and staffing. In one area, the finances of the university, big data can help the most. Universities rarely have a complete financial enterprise picture. Good data collection and analysis can assist higher education institutions to make the most of their finances. It can reduce redundancies, take advantage of surpluses, and correct areas of

deficit. The key is good metrics to guide the data collection and the analytics to make sense of all the data.

It is not only in the business of the university that big data can assist. For the first time, faculty teaching can leave a digital footprint with online and blended learning. Not only is the curriculum available widely, but student faculty interactions, student engagement, and assessments all are viewable in archive forms. Faculty can see where students are struggling, and where resources may not be clear and need to be adjusted. Faculty can be mentored and assisted to improve their courses. Students who need more assistance become viewable because they leave a learning trail in the data. This level of transparency into the teaching process is threatening to a system where the faculty taught alone in the classroom, responsible mainly to themselves for the quality of the teaching. Student evaluations rarely give faculty substantive feedback and are often tied only to a particular instance of a course performance. With course data, longitudinal information can be collected to improve not only courses, but also programs.

Higher education has a way to go to create metrics that guide data collection and the analytics to make sense of the data. Tools are being put into place to assist in the process. However, tools in and of themselves can't produce the information needed to craft good business practices, excellence in teaching, and monitor the learning and progression of students. Higher education must determine success and pursue it with focus and credibility.

Unbundling Higher Education: Emerging New Business Models

The current business models within higher education are struggling. Future predictions suggest the fallout from the current disruptions hammering higher education will result in the demise of a number of higher education institutions. Universities need to consider unbundling the "multi-university"[78] in favor of an approach that determines which services and activities make sense for a particular institution to pursue.[79]

Partnerships will be essential components for higher education's advancement into the future. Research, while located in some higher education organizations, will expand more into research parks that are partnerships with industry, government, and entrepreneurs. Research results will need to become more open and not silenced behind exclusive intellectual property agreements, but shared with the community. Academic consortia will form a crucial vehicle to reduce redundancy and drive down cost. Some consortia will form around topical centers of excellence. Some will take advantage of region and location. Others may join together for a program or a course.

Shared expertise and resources for particular purposes will extend capabilities of organizations and at the same time drive down cost. Students will be able to choose across a broad landscape of classes and programs taught by top leaders in the field.

Barber suggests that five types of universities will survive going forward: First, the elite university; Second, the mass university; Third, the niche university; Fourth, the local university; and Fifth, lifelong learning mechanism.[80] Each model has a global and online/blended model that uses various forms of partnerships to achieve success. I would suggest there is another model that is emerging, a "brokerage" model based on competencies that include higher order thinking skills: critical thinking, problem-solving, creating, and innovating. A brokerage model is broader and not dependent on a college or university to award a certification. Industry would articulate the types of skills needed for particular jobs to an education broker. The broker finds individuals who are the right match with competencies and experiences. The competencies can be determined through testing, course assessments, portfolios, internships, and other methods. Courses can be taken in higher education, including free courses like MOOCs, and those listed above. Testing out of ("validating") a course, or set of learning outcomes, is an option through the broker. Student charges would be minimal to manage testing and advising. Industry partners would pay either a yearly fee or on a per position basis. Students could leverage informal learning experiences through testing that validates their competencies. Higher education would be a feeder into the system in terms of providing various educational experiences, but the degree would not necessarily be the end point. In some cases, it may be a starting point that would not be required by all.

Conclusions

Higher education is facing the biggest set of challenges in history to its models for delivery.[81] Disruptive technologies and globalization have opened the competitive and learning landscapes beyond the limits of time and geographical region. Students can gain an education from anywhere in the world at any time. The business models are being shaped by these disruptions. Technologies are not an end in and of themselves, but they are key in driving transformation in higher education. Teaching and learning technology tools are being used to enhance learning in the critical areas required by employers.

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Chapter 6

Addressing Changing Mindsets: Transforming Next Generation Leader Development with Transmedia Learning[1]

Elaine M. Raybourn

The main task facing trainers and military educators in the early 21st
century is how to best equip the individual junior leader both mentally and
physically for the challenges of a transformed security environment.
Lynda Liddy, Australian Army Journal, 2005[2]

More is expected from leaders today than ever before. International Organizations such as NATO (North Atlantic Treaty Organization), Non-Governmental organizations (NGOs), as well as government agencies and departments are confronted with uncertain times and resources to operate in a consistently more perplexing geopolitical world. An essential element to meeting these challenges is the development of adaptive leader competencies. Twenty-first century leaders must develop a keen sense of the second- and third-order effects of their actions on the political, diplomatic, and socio-economic situation, as well as the reputation of their respective countries. Leaders must not only possess superior warfighting skills, but also master the art of operational adaptability which includes humanitarian assistance, peacemaking, and restabilization. Successful leaders at all levels and across different disciplines or agencies require specific and general skills in foreign languages and regions, technical expertise, intercultural communication, interpersonal engagements, and adaptive thinking.

In this chapter, adaptive thinking, or adaptability, is comprised of cognitive readiness[3] and defined as consisting of competencies such as negotiation and consensus building skills, the ability to communicate effectively, analyze ambiguous situations, be self-aware, think innovatively and critically, and exercise creative problem-solving skills.[4] Each of these "soft skill" behavioral competencies is an essential element of leader development training for international militaries—from the elite members of

the Joint Special Operations Forces, to young, inexperienced Soldiers, Sailors, Marines, and Airmen. Next generation leaders must become warrior-diplomats who are adaptive. We must prepare our leaders for the challenges of national and international security implications of global transformation.

Global transformation has been of keen interest for the past decade or so. The Transformation Chairs Network was established by the Office of the U.S. Secretary of Defense in 2004 to "move transformational thinking down into the heart of the military organizations, principally through the education system, to kick-start a bottom-up push for change."[5] The organization later evolved into the International Transformation (ITX) Chairs Network. The Chairs are concerned with preparing national security leaders for complexity, chaos, and surprise. Notable efforts are made throughout the training and education community to prepare leaders for unpredictable, complex security situations. There are a number of stand-alone training systems or applications aimed at leadership skills ranging from web-based advanced distributed learning and interactive multi-media instruction, to single-player games. These systems, although not discussed in the present chapter, contribute to the collection of resources readily available for leader training. Command training centers and schoolhouses may also provide live-action, constructive or virtual simulation, and/or multi-player game-based training exercises in which leaders rehearse operations requiring the use of adaptive thinking.[6]

General Martin E. Dempsey, U.S. Army, Chairman of the Joint Chiefs of Staff indicated in a 2011 interview that the most important attributes of a modern leader's career were being inquisitive, adaptable, and innovative.[7] According to General Dempsey, in the early stages of military leadership it is important for junior leaders to be inquisitive. At an intermediate stage, leaders should be able to show adaptability, or the ability to react to things that change. More specifically, adaptive leadership is the ability to accept risk and change mindsets or behaviors in an appropriate manner as the situation changes.[8] Finally, General Dempsey asserted that at senior levels of leadership, leaders must be able to innovate—or anticipate change before it happens, and get in front of change with appropriate actions. To consistently get out in front of change, a leader must be a creative, adaptive thinker.

Developing agile military thinkers requires a fairly agile institutional approach to education. This can be a unique challenge for most institutions. The challenge for members of the education and training community is to adapt and change along with organizations as they evolve to address technological and cultural shifts. Therefore

several questions face the International Transformation (ITX) Chairs Network: What trends exist today that are already driving change, and how can the Chairs leverage these trends toward achieving their goals of international institutional transformation? In effect, how can the Chairs change mindsets and attitudes regarding leadership education and development?

The Chairs use a four-element model of transformation that was adapted from H.J. Leavitt by John Garstka in 2009 as a guiding principle for the way transformation is approached.[9] This model describes four elements that are fundamental to large-scale change: Technology, People, Process, and Organization.[10] Large-scale change is usually the result of an innovation in one of these areas that diffuses to the other elements. For example, technological innovation is often the precursor to change in the other elements of the model because how we use technology influences our communication and relationships, our daily habits, and organizational processes. Technology may be a driver for change in leadership development and education, but for true transformation to exist each element of the model (people, process, and organization) must also adopt the innovation. True transformation requires social, institutional, and cultural change. Engaging the social system is key to true transformation. The diffusion of innovations that originate in a specific element of the model cannot successfully occur without members of the social system communicating the innovation to each other over time.[11]

Subsequent sections of this chapter discuss transmedia learning using the four-element model of transformation as a framework in which to situate the concept for the International Tranformation Chairs Network. The first section, *Technology*, introduces current interactive technologies such as serious games, Massively Open Online Courses (MOOCs), and social media. The second section, *People*, highlights how transmedia learning increasingly introduces personalization into pedagogy. The third section, *Process*, discusses transmedia learning storytelling and its role in authentic learner engagement. Finally the fourth section, *Organization*, concludes with an example of how transmedia learning is used to support training with video game technology by the U.S. Army.

Transmedia Learning

The application of transmedia learning is a fairly recent innovation. In 2010 this author began applying transmedia storytelling to DOD training and education while developing graphic novels to support game-based training scenarios with the U.S.

Army Program Executive Office for Simulation Training and Instrumentation Games For Training (PEOSTRI) and the Training and Doctrine Command (TRADOC) Capability Manager TCM Gaming.[12] Through this application, she socialized the idea within DOD while supporting the Advanced Distributed Learning Initiative, under the Office of Secretary of Defense, Training, Readiness, and Strategy (TR&S). The term, transmedia learning, was later introduced by its Director, Mr. Frank DiGiovanni, in November 2012, during a presentation to the President's Council of Advisors on Science and Technology Meeting.[13] The transmedia learning construct has since been refined and defined by this author as *the scalable system of messages that represent a narrative or core experience that unfolds from the use of multiple media, emotionally engaging learners by involving them personally in the story.*[14] The goal of transmedia learning is measurable behavioral change, whether physical, intellectual, attitudinal, or a combination.

The idea of transmedia learning represents a pedagogical process that has the potential to revolutionize the way leaders will learn in the next 5-10 years. This chapter posits that in order to train and educate men and women to demonstrate adaptive leadership, we must embrace true transformation, and shape, if not change, mindsets regarding future leader development to address complex security challenges. A survey conducted by the Center for Creative Leadership in 2012 with 462 persons (72 percent from the United States) indicated that the most important competencies 10 years from now would be adaptability/versatility, communicating effectively, learning agility, multicultural awareness, self-motivation, and collaboration.[15] That is to say, the need for adaptive leaders will not diminish, but rather grow steadily. How can we prepare our leaders to be adaptive if our pedagogical processes are brittle and unable to adapt themselves? How can we prepare leaders to innovate in a complex environment if the stand-alone approaches we use are simplistic and unimaginative? Military men and women across the globe deserve our very best ideas, and our very best efforts. Transmedia learning leverages best practices emerging from industry to address the transformational changes required by 21st century education. These industry best practices show great promise in shaping our understanding of disruptions in technology, pedagogy, and assessment.

Technology: Transmedia Learning Connects Stand-Alone Technology

Transmedia learning is a storytelling technique borrowed from the entertainment industry that is applicable to military training and education because it offers

a framework from which to connect stand-alone, immersive technologies such as serious games, distributed online learning, and social media. Games are not only used for entertainment purposes. Serious games are interactive digital technologies used for training and education in private, public, government, and military sectors.[16] Serious games provide an environment for active, critical learning. Through games one learns to appreciate the inter-relationship of complex behaviors, signs (images, words, actions, symbols, etc.), systems, and the formation of social groups.[17] Serious games can include role-play, and social-process, immersive simulations for exploring interpersonal development, adaptive thinking, combat tactics, emergency response, diplomacy, governance, health, education, management, logistics, and leadership.

Serious games open up possibilities for simultaneous learning on multiple levels. Players may learn from contextual information embedded in the dynamics of the game, the organic process or story generated by the game, and through the risks, benefits, costs, outcomes, and rewards of alternative strategies that result from decision making.[18]

Government use of serious games has grown steadily. Militaries have been utilizing game-based training for the past several years. Several game-based training studies are available.[19] With the exception of a few studies on game-based non-kinetic engagements,[20] most address kinetic training missions. The United States military adopted serious game-based training for reasons that also appeal to many other organizations including reduced costs when compared to the cost for large simulators or live training, reaching digital natives who have grown up with technology, increased motivation to learn,[21] and the ability to leverage state-of-the-art technology.

However, in the excitement to introduce new technologies to military leaders, the military training community often provides stand-alone solutions without strategic consideration for the instructional pipeline. The deployment of stand-alone simulators, games, tools, and applications does little to provide the learner with a cohesive, core experience that is memorable and accessible over time. Stand-alone contributions to leader training should be complementary to the existing training pipeline and should neither overshadow nor subvert the overall training goals and objectives. Whenever possible the community should strive to leverage the design of the program in which the deployment of the stand-alone solution is intended.

Transmedia learning offers an adaptive approach to connecting training experiences and ensuring that they endure over time. Transmedia learning incorporates games and other interactive experiences into a blended strategy that involves the

learner in multiple ways, with multiple entry points into the narrative, over several media. It allows the learner to stay connected with training content throughout the day. For example, short videos of how to properly execute a complex procedure in a serious game scenario can be viewed from a mobile device before training, and learners may post comments, suggestions, questions, or reactions for peers and instructors afterward through the use of social media. Ideally, each medium (video, computer game, asynchronous text messaging) makes its own unique contribution to learning objectives. While it may not be possible to train all instances of a training objective with a serious game or immersive environment, the scenario in a serious game can be reinforced by other media over time. This way, integral elements of a training narrative get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated learner experience.

Learners can also take a lecture-based Massively Open Online Courses (MOOC) and meet up with others synchronously online or in person for an experience that extends the online lecture videos. Most of the critical learning associated with MOOCs may occur in side-by-side interaction with others, during online meetings, and especially in the case of dismounted infantry leaders when the lessons learned are taken down range. Viewed within a larger context of an instructional program or training event, each medium in the transmedia learning ecosystem is a point of departure from which experiences are shared. Note that transmedia learning does not necessarily imply instructor control over content—executed properly transmedia learning elicits the willful contribution of experiences and interpretations to training and education as it unfolds over time through the continual use of different media that reveal fresh content.[22] We allow for co-creation in transmedia learning because we seek to involve the learner cognitively and emotionally.

People: Transmedia Learning is Cognition in the Wild

According to Mark Long, Transmedia Producer and CEO of Meteor Entertainment, Inc.,

> We are in a transitional period where our relationship with media is shifting to multiple screens. Our audience is growing up in a digital world. The playing, reading patterns, and habits of young and old are changing as reading extends from the printed page to [interactions with] tablets and to a future of a myriad of diverse devices.[23]

Learners today expect content to be available anytime, anywhere, and on any device. This presents both opportunities and challenges. The opportunities lie in the perception that with multiple devices, learners will be able to interact with educational content longer, more often, and more directly. However the challenges lie in overcoming data deluge. There is a risk that the learner will become and remain overwhelmed as long as no framework, or strategic process, is in place for managing distributed learning. Learning in the next few years could easily become a collection of discrete instances, locked in stand-alone tools, and applications.

This has not gone unnoticed by educators. Education at all levels is in the process of reinvention to foster more independent, self-regulated, and self-paced learning. Online learning has never been as popular as it is today. Hundreds of learners can take easily the same lecture course at the same time. MOOCs allow these learners to take courses for free, or for college credit. Complete K–12 education is available online. As education transforms there is an expectation that learners will willingly engage in self-directed, life-long learning. Unfortunately since we are still at the early stages of this revolution the onus is on the learner to make sense of the myriad of stand-alone devices, applications, and tools. If the international training community is to use technology to facilitate leader education and development, we will need an overarching framework that more purposefully connects discrete content and tracks user interactions across devices and over time. These growing trends suggest that we must find more adaptive methods to best prepare future generations of leaders.

The promise of transmedia learning can be best understood by applying distributed cognition theory and the notion of "cognition in the wild" to interaction patterns we increasingly observe with media. Cognition in the wild refers to human cognition as it naturally occurs and adapts in the everyday world—situated in culturally constituted human activity.[24] Distributed cognition addresses how humans' use of media and technology aids memory, decision–making, and understanding. Today it is not necessary to memorize the Periodic Table of Elements; it is enough to know where to find it when it is needed because learners now often offload the cognitive task of memorization. One could say that the Internet has become a cognitive prosthetic. As technologies become more personalized, the learning we co-create while using technology will also become more inextricably linked to that technology-mediated episode. In other words, one's cognition is embodied and may reside in, or be strongly linked to, a myriad of devices, environments, situations, and people. In

this approach cognition does not solely pertain to the individual. Currently adaptive leaders synthesize what they have learned from discrete media experiences on their own. In the future, transmedia learning could be used to personalize and organize information into connected, embodied experiences that facilitate and enhance distributed cognition. For transmedia learning to be successful it will have to leverage personalization, play, pedagogy, and assessment while learners naturally encounter content at their own pace. This could empower learners to be fully engaged in their own learning process, or story.

A key factor in transmedia learning is that learners need to see themselves as protagonists of their own story. Their buy-in is an integral part of the storytelling and is frequently accomplished by engaging learners emotionally. Honing and understanding one's emotions is necessary to develop adaptive leadership skills.[25] Since leadership education strives to develop adaptive leaders, transmedia learning, and training in general, should create real connections to educational content. This is done by addressing learners' emotional needs while learning or presenting them with different opportunities to explore the emotions they may find appealing to try.[26] Good transmedia learning takes learners on a journey through narrative and storytelling experiences with dramatic moments in which learners demonstrate how they feel, how they think, and how they act. Learners should have opportunities to use their imaginations, be creative, and be mentally stimulated. In order to mentally stimulate learners, emotions must be engaged. The human brain is wired to pick up on messages crafted as stories because we feel real emotions when we connect with content or a character in a story.[27] When learners are emotionally invested in the story and see themselves as protagonists in their own training, they not only remember it better, but also continue to respond to new or repurposed content that is associated with familiar emotional triggers.

Process: Transmedia Learning is Executed through a Storytelling Campaign

How is transmedia learning executed? Transmedia learning is executed through a well thought-out campaign. A transmedia learning campaign offers a cohesive, continuous learning journey that employs rich narrative content and multiple media deployed strategically through a coordinated process. The term "campaign" is used throughout to refer to the coordinated process that links several media, related narratives, and training approaches to a single idea or theme. The use of transmedia learning campaigns for training and education is a transformational idea to focus multiple media on the retention, remediation, and knowledge reinforcement of a training nar-

rative that extends beyond a single stand-alone activity.

Transmedia learning is adapted from commercial and entertainment industries such as marketing, advertising, film, and games for use in education and training. When used by entertainment and advertising industries, transmedia engages an audience across multiple media by providing several unique entry points into a narrative. The goal of transmedia for entertainment is to develop, grow, and sustain an audience of consumers. The first use of transmedia was in 1976 to support George Lucas' *Star Wars*. A publishing group was formed to produce and promote all products associated with the film such as games, movies, toys, websites, cartoons, books, and comics.[28] The objective was to create a fanbase that followed the transmedia experience across different media so as to not miss out on any part of the story. While the films serve as the basis for the main story, the audience can remain engaged in the *Star Wars* storyline through multiple media such as websites, wikis, video games, books, encyclopedias, comics, animated series, toys, clothing, and jewelry, among many others. In fact, the franchise is so large now that the richness of the narrative content is referred to as a story world, or universe. Whether one's interest is political, social, science fiction, or mythology—the franchise offers unique content to appeal to different interests in order to increase their fan base. Some in the entertainment industry argue that transmedia may be a new term for an old idea of cross-media storytelling, but its impact on education and training has yet to be fully explored.

In his keynote address to Defense GameTech 2011, Mark Long indicated that a transmedia campaign is planned early and rolled out on at least three media platforms.[29] The campaign includes elements that encourage audience participation such as a Web portal, social media, and other ways for the fanbase to contribute to the storytelling by providing user-generated content. These guidelines for media deployment can be also applied to a transmedia learning campaign.

Consider a transmedia learning campaign for a Soldier who needs to train anywhere, anytime. In this scenario (See Figure 1) a Soldier trains in the field, with different simulators, on different platforms, in the classroom, and with peers (both co-located and distributed). The use of different media allows each individual to engage in the training from different entry points. Training is comprised of interacting with one or more of the following technologies: computer-based training, digital tutors, mobile performance aids, immersive virtual environments, serious games, machinima, graphic novels, peer-generated content, and social media. For instance, if an individual is learning the art of being a Soldier-Diplomat, they may begin their language

and culture training with a digital tutoring session and continue with a single-player scenario on cultural awareness that is delivered via a serious game. The transmedia learning ecosystem may assess the actions of the Soldier as they train and store this data in their learner profile, or learner model. The Soldier can also engage in an alternate reality game on cultural awareness with their peers. They can consult their peers through social media to help remember a detail from the collective training. Later the Soldier can blog about what they learned in their online journal and shares this information with their team. The conversation about cultural awareness continues on Twitter. The Soldier can then read about case studies via graphic novels or by watching videos. Learning is self-paced, collaborative, adaptive, and/or mediated by their instructors, virtual mentors, and embodied agents. Each individual creates content, tracks their own learning, and monitors their own progress. Most importantly, training is delivered via a variety of media, making it more dynamic, accessible, and engrossing. It leverages best practices and advancements from the commercial game industry, and delivered and reinforced via transmedia learning.

Figure 1.
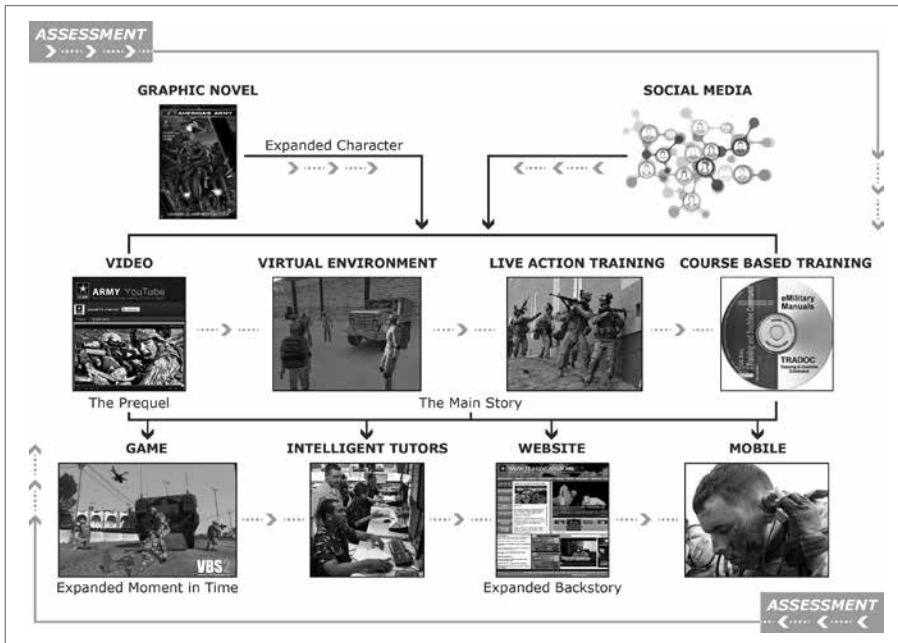
The example above demonstrates how utilizing transmedia learning campaign strategies, integral elements of a training narrative and core story (e.g. Soldier-Diplomat) get dispersed systematically across multiple delivery channels at different times for the purpose of creating a unified and coordinated learner experience. Ideally, each medium makes its own unique contribution to the unfolding of the story. There are opportunities for users to generate auxiliary content and utilize personalized and peer/social learning to the extent possible. In this way, transmedia learning is a scalable system that conveys a consistent, yet interactive, communication message.

There are several similarities, but also important distinctions that exist between the use of transmedia campaigns for entertainment or learning. In the example above, a transmedia learning campaign for personalized learning may require a persistent, independent open learner model that can be shared and is able to process big data in order to recommend relevant, contextual information. Stealth methods of user experience tracking, data mining, analytics, and assessment would become essential elements of a transmedia learning campaign as well as securing personally identifiable information and data. Finally, the transmedia learning campaign would incorporate best practices from theory, pedagogy, and assessment.

Organization: Transmedia Learning is Adaptive

An adaptive organization responds to innovations in technology, people, and processes. The U.S. Army formally identified a learning model to meet a new training and education need in TRADOC Pamphlet 525-8-2, *U.S. Army Learning Concept 2015*.[30] This document states that, "although the Army was an early adopter of distributed learning nearly 20 years ago, the program did not fully realize its intended goal of anytime, anywhere training."[31] The Army Learning Model (ALM) is a learning model that leverages personalized, self-paced instruction, and opportunities for peer interactions. The ALM vision incorporates learner assessment while the learner naturally encounters content and experiences. "The future learning model must offer opportunities for Soldiers to provide input into the learning system throughout their career" as well as account for Soldiers' prior knowledge and experiences.[32] Thus, the learning model represents training the way that people learn naturally—by formal and informal learning experiences in and out of the classroom and across learning platforms, simulations, games, social media, and tutoring systems.

In order to accomplish the ALM vision, adaptive, blended, multi-media deployment and storytelling strategies will be needed to effectively motivate personalized,

self-paced training and education. ALM is a transformational vision that will require a paradigm and cultural shift. An ALM transmedia learning campaign will require immersive experiences, tools, and applications that not only interoperate, share data models, and tell their own unique stories as described above but also deliver cohesive, cross-platform training that is memorable and increases retention.

A step in the direction of ALM and an example of transmedia learning in use by the U.S. Army links a training story in the form of a graphic novel to a serious game. The graphic novel can be read before and after game scenario training, or training delivered via any methodology. This way the U.S. Army encourages self-paced learning and increased contact with training content. The PEOSTRI Games for Training Program distilled 160 complete tasks from training support packages (TSP) into graphic novels and machinima. Machinima is comprised of video vignettes that are captured from a game environment with game characters, alleviating the need to hire human actors. Graphic novels are stories that are told using text and illustrations, often in comic book formats. Digital graphic novels, as in the U.S. Army example, also utilize interactive links and embedded machinima or videos.

The graphic novels set up the story behind stand-alone scenarios in the serious game and provide interactive vignettes made from in-game machinima that demonstrate the right way to execute certain tasks. The interactive digital system includes instructor and student guides, tactical materials, After Action Review guides, and game scenario files. The use of graphic novels to augment the serious game training allows learners to review tasks before and after training. The graphic novels are reminiscent of the U.S. Army comic book series popular in the 1960s called the U.S. Army Preventive Maintenance Manual published by PS magazine. Since the content of the TSP tasks must be accurate, this stylistic approach allows more tolerance for lengthy sections of text as it ties the TSP graphic novel to a format that is familiar. The comic book format used by the U.S. Army also reinforces episodic story elements.[33] This U.S. Army example demonstrates initial efforts to connect content across media in order to provide more adaptive training.

Transmedia learning represents a unique opportunity to transform serious games and other tools for education and training from stand-alone instances to complete, coordinated experiences that transcend time and any one medium. In particular there is a need to deliver adaptive training and education for international militaries across multiple media, providing the learner multiple entry points into the training.

Conclusion

Transmedia learning is the scalable system of messages that reveals a narrative or core experience through multiple media platforms, emotionally connecting with learners by involving them personally. This approach is not only consistent with the training and education goals of the ALM and those of international militaries in general, but it can also provide a practical framework for developing adaptive, media-rich training that presents cohesive and integrated content. In order to train and educate men and women to demonstrate adaptive leadership—we must embrace true transformation and shape, if not change, mindsets regarding future leader development with technology. The demands of the 21st century on training and education will also require that we transform current practices. Thinking about learning from the perspective of transmedia represents an approach to education and training that could have a significant impact on how educational experiences are designed and delivered for the development of adaptive leadership. Transmedia learning is, in and of itself, adaptive. No learner interaction with a transmedia learning campaign should be the same, nor could it be if executed correctly. Transmedia learning evolves with the learner.

Earlier on, a set of questions were asked that can now be answered: How can we prepare our leaders to be adaptive if our pedagogical processes are brittle and unable to adapt themselves? How can we prepare leaders to innovate in a complex environment if the stand-alone approaches we use are simplistic and unimaginative? The answer is that educating and training adaptive leaders requires an adaptive approach and transmedia learning has the potential to be one of the most adaptive instructional methodologies under exploration. Not only is the process non-linear, but also social. Human interactions are the most dynamic of all. Transmedia learning content must remain fresh and new in order to respond to the rate with which next generation leaders will consume it. Adaptive, stealth assessment techniques will be required to keep up with learners as they shift intellectually, and move physically across media. Transmedia learning is an adaptive process that shows great promise in shaping our ability to innovate and revolutionize the way leaders will learn tomorrow.

Notes

The author provides support to the Advanced Distributed Learning (ADL) Initiative. The views expressed here are the author's alone.

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Chapter 7

Transforming Education through Neuroscience, Cognition, and Game Design

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Adaptability is a metacompetency critically important to the United States Department of Defense (DOD).[1] There is a need for organizations, leaders, and individuals to adapt to an increase in the type and intensity of stressors and ambiguity existing in today's business, political, and defense environments, a need that is not limited by organizational or generational boundaries. ACT21S (Assessment and Teaching of 21st century Skills) has identified three "ways of thinking" skills as part of defining 21st century skills: creativity and innovation; critical thinking, problem solving, decisionmaking; and learning to learn, metacognition.[2] The National Research Council has discussed the need for these ways of thinking to be acquired generally across problem domains to be effective.[3] Taught as general cognitive skills, creativity, problem-solving, and metacognition are all crucial skills facilitating desirable competencies including adaptability.

Training for adaptability has been a longstanding interest of the DOD, commensurate with the renewed interest in irregular warfare. Recently, "adaptive stance" has been recognized by the DOD as an essential characteristic for the warfighter, and developing greater adaptive stance for warfighters is stated as a high priority by the Office of the Secretary of Defense and the U.S. Army, as documented in the *Training Readiness & Strategy* paper[4] as well the *United States Army Learning Concept (ALC) for 2015*.[5] Adaptive stance and adaptability, while an important competency at a performance level, tend to be context specific and begin on a cognitive level. Cognitively, micro-momentary decisions and cognitive processing (i.e., adaptive cognition) are the basis for all adaptable behavior and performance, which in turn comprise adaptability at a human systems level. Therefore, utmost importance must be placed upon understanding and fostering adaptability at its origin: the cognitive level.

The U.S. Army also emphasizes leveraging generational and learner differences present in today's force, as well as taking advantage of technological opportunities.[6] To address the exigencies of organizations within military and industry, and the educational outcomes defined as 21st century skills, learning environments need to support the types of activities fostering these skills in a manner that is highly engaging, leveraging intrinsic learner motivation, and goal matching.[7] Advanced technologies should also support detecting and recording (i.e., tracking) of psychomotor, cognitive, and affective characteristics of students and the social contexts of teaching and learning processes alike. These learning environments should be ubiquitous, easily accessible, and have broad appeal to a variety of learners and age groups.

Games and serious games support generational differences—as they are ingrained within the culture of Generation X, Y, and earlier—and a varied, ubiquitous set of technological opportunities that can now be tracked and be leveraged for learning.[8] At of the end of 2012, the video game industry has grown to $18.4 billion.[9] This statistic shows the magnitude of the investment currently made in readily available games. Widely available commercial games and targeted serious games may indeed have the ability to foster the cognitive adaptability (CA) critical to warfighter readiness and could be employed more extensively as components of virtual learning environments.

However, in order to utilize the full capabilities of computer-based games to train for specific desired performance outcomes (i.e., adaptability), design characteristics that specifically contribute to an increase in the cognitive components of these outcomes must be identified. In the case of adaptability, the knowledge generated in defining these traits can be used to identify games currently available that might foster cognitive adaptability, as well as to design games in the future for the specific purpose of increasing it. This requires gaining understanding of CA as a construct and how existing video games might be leveraged as an out-of-the box learning environment that could increase CA in the players.[10] This process is not unique to CA but could be employed for a variety of cognitive competencies. To illustrate the relationship between performance outcomes, modes of thinking, and their cognitive underpinnings with game design and assessment, this discussion will focus on an adaptable stance, adaptability, and CA.

Adaptability

Adaptability is described in various ways and according to different levels and contexts. On a performance level, this refers to one's ability to repeatedly try novel or

different strategies, incorporating useful feedback with the ultimate goal of improving overall success. Someone incorporating this approach is said to have an adaptive stance.[11] However, adaptability itself can be described as a mode of thinking. Adaptability, as with other modes of thinking, is considered to be a competency that can be learned, measured, and assessed.[12] Adaptability has also been described in three types: interpersonal adaptability, physical adaptability, and mental adaptability.[13] Mental adaptability can also be referred to as cognitive adaptability. The components of adaptability are also considered to be the integration of specific cognitive and relational skills with dispositional factors such as the tolerance for ambiguity, openness, and resiliency.[14] As relational and interpersonal skills seem to be mostly influenced by dispositional traits which are not as easily altered, the need for emphasis on the developable cognitive skills that contribute to adaptability is significant.[15]

COGNITIVE ADAPTABILITY

Both adaptive stance and adaptability begin on a cognitive level. As a unit of analysis, the cognitive skills that contribute to adaptability provide a means to understand adaptability at the individual cognitive level not confounded by relational or dispositional variables. CA exists mostly at the level of micro-momentary cognitive decision processes and is closely related to the concept of fluid intelligence, a complex human ability that allows one to adapt to novel cognitive problems or situations and is critical to cognitive tasks and learning. Although long considered static and hereditary, there is compelling evidence that fluid intelligence is closely related to working memory and can be trained or improved.[16] These gains were shown to exhibit transference; however, it is not known if the effect is persistent over time.[17] Good has discussed CA in the perspective of cognitive agility which consists predominantly of cognitive openness, focused attention (the ability to attend to relevant stimuli and ignore distracting ones), and cognitive flexibility.[18]

All of these processes are either related to or inclusive of executive function which encompasses the pinnacle of human functioning in intellect, thought, self-control, and social interaction. Anderson has modeled executive functions as inter-related subdomains of attentional control, cognitive flexibility, goal setting, and information processing and claims that coherent and intact executive function is essential for new learning and adaptive functioning.[19] These subdomains can further be described by specific or supporting processes. For example, cognitive flexibility includes the processes of divided attention and working memory (including spatial), attentional

control includes selective attention and self-regulation and monitoring, goal setting includes planning and strategic organization, and information processing includes efficiency and speed.[20] These and other supporting cognitive processes can be empirically assessed through cognitive batteries targeting each one specifically. Functioning levels of these processes directly impact the ability of an individual to learn and adapt. For example, on an operational level spatial working memory abilities are important in navigation, language acquisition and mathematical comprehension, and are important components of higher order thinking skills such as problem solving and critical thinking.[21] Cognitive planning (part of goal setting) makes use of these abilities as an individual thinks through the steps and sequence of steps to solve problems and is a critical to the reasoning of problem solutions and evaluation of results.

On a higher level incorporating the processes of attentional control, metacognitive ability is a cognitive competency that has been tied as a contributing factor to adaptability in past research.[22] Brown et al. defines adaptability as the ability to actively monitor one's levels of understanding, decide when it is inadequate, and adjust one's actions, thoughts, and decisions according to that level of adequacy, as well as to the current environment or situation.[23] Closely associated with metacognition and considered a key component of CA is metacognitive awareness. Metacognitive awareness is the awareness of metacognition and of one's own metacognitive abilities[24] also defined as an aggregation of five dimensions of metacognition: goal orientation, metacognitive knowledge, metacognitive experience, metacognitive control, and monitoring.[25] These dimensions of metacognition are actuated through one's own metacognitive awareness (MA) with individual levels influenced through various experiences indicating positive correlation between metacognitive awareness levels and age. MA could be considered related to three of the primary components of the executive function subdomain of attentional control: selective attention, self-regulation, and self-monitoring. For CA, this construct is applied in the micro-momentary reaching a state of automaticity contrasting with what is commonly thought of as metacognitive activity occurring over a longer time period, e.g. reflection. In summary, metacognitive awareness could be considered a bridging construct over the executive function subdomains of attentional control and cognitive flexibility.

Cognitive flexibility is also defined as the ability to cognitively control and shift mental sets. This ability requires the use of cognitive (self) monitoring and cognitive (attentional) control, which makes it often discussed as synonymous with metacognitive ability. Assessments of cognitive flexibility most often include assessments of

working memory, divided attention, and shifting behavior. Metacognitive awareness and cognitive flexibility are considered by many to be the key components of CA and crucial to adaptive expertise and problem solving.[26]

MEASURING CA

Assessment of executive function is difficult due to the range of and diversity of skills associated with it. No single test can assess all of its various components; therefore, a battery is required.[27] Cognitive testing using a battery allows components critical to CA, such as cognitive flexibility, focused attention, and fluid intelligence, to be assessed empirically[28] and have been validated recently through functional imaging.[29] Multiple battery administrations may be used as repeated measures, allowing the detection of changes over time. Typical battery components have been historically associated with the testing of executive control in sub-normal populations due to the ceiling effect found in assessment tasks such as the Wisconsin Card Sorting Test (WCST) and the Stroop Color Test.[30] Currently, however, assessment tasks do exist as valid and reliable measures available to super-normal populations due to testing modes with high ceiling properties. Examples of these tasks and the modes which would allow these assessments are Attention Switching task (AST), Reaction Time (RTI), Spatial Working Memory (SWM), Rapid Visual Information Processing (RVP), and the One-Touch Stocking of Cambridge (OTS).[31]

Metacognitive awareness as a cumulative construct can be assessed through a measure producing a snapshot of the level of an individual's metacognitive awareness as a function of life experiences over time. Through a series of 36 questions, a valid and reliable instrument called the Metacognitive Awareness Inventory (MAI) has been developed, tested, and successfully deployed in multiple organizational environments and academic studies.[32] Using the MAI, metacognitive awareness can be assessed as the current level possessed by an individual at the time of the assessment. However, as MA is developed longitudinally over a lifetime, this type of assessment is not useful for pre and post measures.

Fostering CA

The literature describing interventions to foster or improve CA is limited. However, there are directly related concepts and constructs in psychology that can be derived and principles of game design can be inferred. The fields of clinical psychology and educational psychology have been particularly fruitful in this regard and have

provided interventions and tests from cognitive remediation therapy as well as the theoretical framework of feature overlap theory. Also based upon the micromomentary nature of CA, speed and efficiency of the information processing subdomain is important. Therefore any intervention will need to take this into account.

Cognitive remediation therapy (CRT) is a neurocognitive psychotherapy technique aimed at improving the executive function subdomains of cognitive flexibility (including working memory), and goal setting (i.e., planning).[33] Though it was designed to benefit those with sub-normal abilities, its principles can be extracted and applied with increased complexity to cognitive flexibility training for psychologically healthy, unimpaired individuals and those with supernormal abilities and functioning as well. CRT is divided into three modules, each focusing on a specific neurocognitive function, including metacognitive awareness and cognitive flexibility, and that two components of adaptability (also included is memory) emphasizes cognitive "microskills."[34] Many of the tests, such as the WCST,[35] the Stroop Color Test,[36] and the Contingency Naming Test,[37] among other, can actually increase cognitive microskills. The WCST, which is designed to measure "set-shifting" ability,[38] and the Stroop Test for measuring directed attention are both venerable but may be the most relevant to fostering and measuring cognitive flexibility.[39]

While practicing these tasks themselves can help strengthen CA microskills, other options exist that have been shown to further improve cognitive flexibility. For example, having the patient verbalize their responses to the task while performing it;[40] increasing the amount of verbal information contained in the task while still keeping the rules and relationships in the task purposefully non-explicit;[41] using scaffolding techniques;[42] and employing errorless learning, which uses positive reinforcement and shaping instead of correcting errors.[43]

In addition to the tasks used in CRT, Feature Overlap Theory is also applicable to fostering CA. If training is too similar on a surface level to the actual event, when encountering a situation that requires them to use their skills in real life, they reach for superficial surface connections and fail to utilize their deep, causal understanding of the material.[44] Accordingly, if the training teaches the trainee a deep, causal understanding of the material but is far enough removed, on a surface level, in terms of aesthetics, circumstances and details of a problem, etc., from an actual replication of reality, it forces trainees to exercise their ability to make deep connections and adapt their knowledge to new situations. Thus, this will result in a higher likelihood of increased performance in any environment or situation, and a higher level of transfer

as trainees successfully adapt to new or changing environments by applying their fundamental, causal knowledge in new ways.[45]

Game Design Features for CA

Successful methods of increasing metacognitive awareness and cognitive flexibility in other arenas can provide insight into design characteristics that could make a game an agent for increasing CA. Though some of the concepts drawn upon for insight into improving the cognitive processes that contribute to adaptability were designed for those with subnormal cognitive capabilities, and could have a ceiling to their effectiveness for those with normal or above-average capabilities, their basic tenets can be extracted and applied in more complex and challenging ways to game design. It is conceivable that using this process for other generally trainable cognitive microskills leading to increases in cognitive outcomes would also be effective.

Figure 1. FMDA Framework
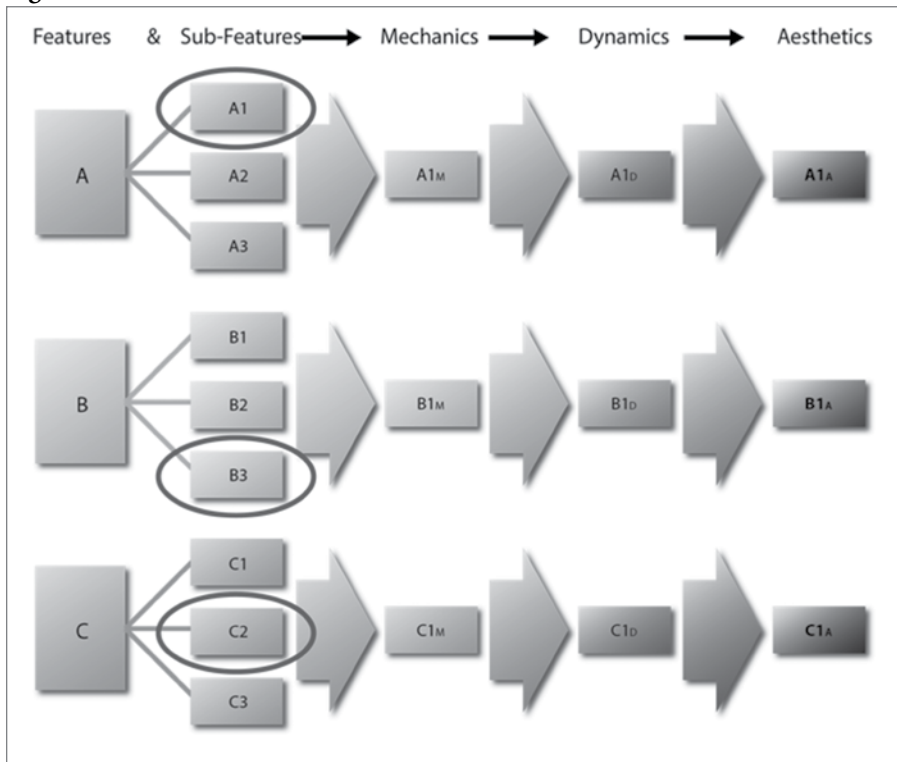
The MDA (mechanics, dynamics, aesthetics) model of game design proposed by Hunicke, LeBlanc, and Zubek is comprised of three design domains.[46] Mechanics are the components of a game at the level of data representation and algorithms. Dynamics are how the game components interact with the player and vice-versa. And aesthetics comprise the emotional response evoked by the mechanics and dynamics. Using MDA as a basis, the characteristics we posit below could be said to represent Features, or more accurately, sub-features within a set of features, a level of game design to come before mechanics in what could be deemed an "FMDA" model. These are the general design tenets, represented by a taxonomy of features and sub-features, which are then translated into the specific mechanics of a specific game. These in turn are integrated into a game's specific runtime dynamics and evoke a particular aesthetic during gameplay. Their place within the FMDA framework is represented in the diagram in Figure 1.

The features themselves are more design "categories," and the sub-features are the specific options of design ideals within the categories. As shown in Figure 2, using the features *Rules*, *Location*, and *Conflict* the sub-features for each would be implicit or explicit rules, realistic/high-fidelity or fantasy-based location, and violent or non-violent conflict.

Figure 2. Features/Sub-Features
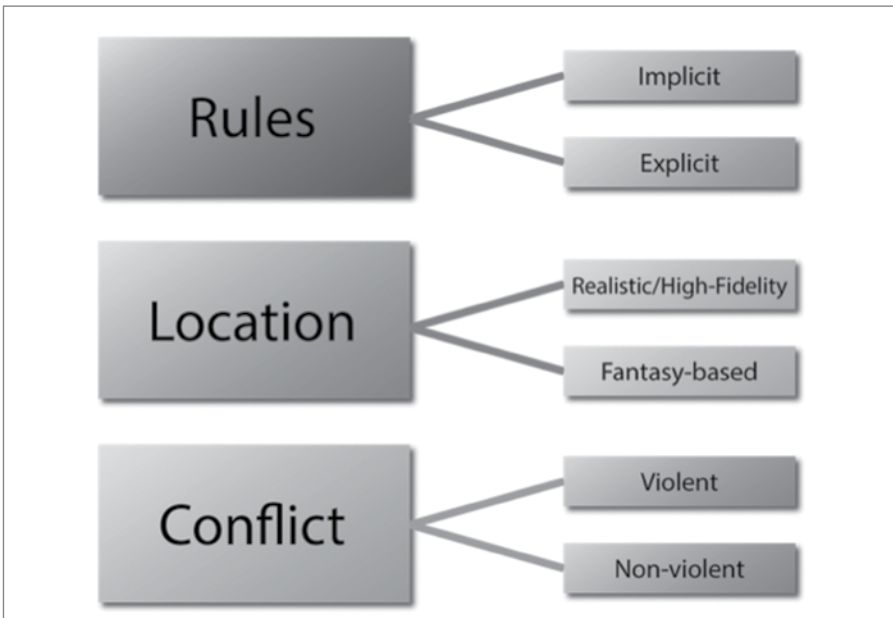
However, not all sets of features and sub-features are this simple. There can, in fact, be an entire taxonomy of features, sub-features, and sub-sub-features that can be selected for at each level. As an example using the feature of *Rules*, there could be categories of Transparency and Consistency, with various levels of each manifesting in sub-sub features (Figure 3). Also, it may be the case that the desired "feature" is also considered a component of a core mechanic which may not have any sub-features present but is a critical component of the game's functionality.

Figure 3. Features/Sub-Features/Sub-Sub-Features
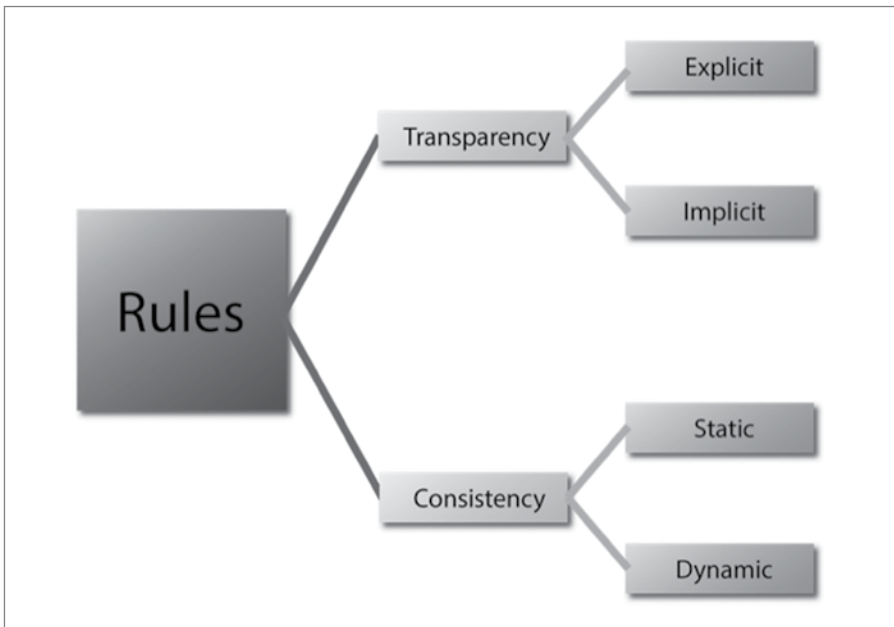
It is with this theory of game design in mind that the following specific sub-features are posited to improve CA.

Unstated/Non-Explicit Rules. The WSCT measures, and is used to improve, participants' cognitive flexibility by forcing them to determine unknown rules for sorting a deck of cards. Participants ideally reduce the amount of errors and amount of time it takes them to figure out these unstated rules, and their cognitive flexibility is measured as such. Therefore, a game or serious game which forces players to play by rules that are not stated explicitly should similarly enhance players' cognitive flexibility, and contribute to increased overall CA.

Unstated/Non-Explicit Changing of Rules. Likewise, just as participants' cognitive flexibility is challenged, strengthened, and measured by changing the rules of card sorting without notice or explanation in the WCST, a game whose rules shift non-explicitly should show the same ability to produce gains in cognitive flexibility among players.

Dynamic, Shifting Environments. Requiring trainees to reach for deep, causal understandings and apply their knowledge to situations that differ on the surface, in detail or circumstance, from their training situations, but retain the same underlying fundamentals, increases their adaptability by essentially forcing them to adapt. Therefore, games whose environments change throughout the gameplay should foster CA as well.

Open-Ended Choices. CA is comprised, in part, by focused attention, and cognitive flexibility (associated with metacognitive ability). These components and correlates all point to the need for choices, the need to have more, as opposed to fewer, opportunities to choose a decision or action from a myriad of possible ones. Making choices requires discerning relevant information from irrelevant information (focused attention), purposeful processing (mindfulness/goal setting), a willingness to experiment and learn from doing (curiosity/cognitive openness), and the creation of novel solutions from an expansive realm of possibilities (creativity), all of which require metacognitive processing. This all points to the need for game-play that is more open-ended than not, one that presents the player with opportunities to synergize solutions rather than choose from small, explicit list of possible actions, as well as think explicitly about and monitor their decisionmaking process along the way.

Time as a Core Mechanic. A core mechanic is the essential activity players engage in over and over within a game. Including time as part of the core mechanic of a game introduces a quantifiable tool for judging performance to game play.[47] Using timed play can motivate responses and actions to occur more rapidly introducing pressure on the player to not only reach the goal but do so more rapidly. As players gain expertise, this can allow and encourage them to continue exploring strategies for reducing their overall time, thus forcing metacognitive activities to occur in the micromomentary. The inclusion of timed play may provide an increase in quality and quickness of signal detection which are easily assessable. Timed play can include anything where time is measured to consequence of the player: either rewards for quick action, negative reinforcement for slow action, or actual time limits on the player's gameplay.

Implicit Reinforcement for Individual Actions/Choices to Achieve Final Goal. Implicit reinforcement for individual actions and choices a participant makes to

achieve a final goal is a technique for fostering cognitive flexibility. Scaffolding techniques, which include modeling, verbal cues, and personal engagement of a student without explicitly instructing, as well as errorless learning, in which students are not corrected for their errors but positively reinforced for their successes, have both been shown to increase cognitive flexibility on the WCST.[48] The success of both these strategies at increasing cognitive flexibility suggests that players of a game should not be corrected for incorrect actions or choices they make along the way to achieving the final goal, but should see the results of their actions and choices explicitly in the final result. The results of their actions towards the final goal (and positive reinforcement should that goal be achieved) should be the only indication players have of whether or not their individual choices were correct. This also requires them to metacognitively assess their strategies and thought-processes for effectiveness.

Using Video Games to Enhance Cognitive Capabilities

In 2012, the Advanced Distributed Learning (ADL) Initiative designed and executed an experimental and correlational study to understand if the above design tenets may have an effect on increasing CA. The researchers identified *Portal 2* by Valve Software as a gaming intervention that included most of the above features except time play and is commonly played and available. Airmen from Sheppard Air Force Base played either *Portal 2* or Microsoft games (packaged with Microsoft Windows 7) over a period of 12 hours. The CANTAB cognitive battery by Cambridge Cognition was used as a pre- and post-measure versions of Haynie's metacognitive awareness inventory[49] used as a complete metacognitive awareness inventory and as a snapshot of metacognitive awareness at specific intervals during game play. After the experiment, game history data were also collected on each airman. The experimental findings indicated that the intervention increased focused attention significantly (a primary component of CA) but did not have any significant effect on the other measures. Correlating pre-test data with game history data produced several interesting and significant findings. Airmen who had played *Portal 2* consistently over the past six months came into the study with higher measures of spatial memory capacity. Also, those that played any genre of video games 19 hours per week of more scored significantly higher on the pre-test measures of spatial working memory capacity, spatial manipulation, and executive planning.[50] These are all critical cognitive skills related to CA. An increase in spatial abilities and cognitive planning in combination with an increase in quality and quickness of signal detection, suggest that frequency

of video game playing generally, as well as specifically playing games with the above mentioned features, may increase cognitive capabilities in the players and specifically those capabilities important to being cognitively adaptable.

However, to utilize the full capabilities of commercial off-the-shelf (COTS) video games as well as design targeted serious games for enhancing cognitive functions, design characteristics specially contributing to the desired increases must be explicitly identified and understood. Although the aforementioned study initially identified *Portal 2* as having the desired features, the design did not separate the design features but treated it holistically as a black box. To understand to what degree the design of *Portal 2* met the proposed design criteria, which specific game design elements were used, and how they met the criteria, an in depth analysis of the game had to occur. It was hypothesized that the decisions and thought processes of an expert gamer captured during game play could lead to this understanding. The analysis of cognitive and behavioral requirements of an expert-level performance is a standard practice within educational psychology, instructional design, and industrial/organization psychology, and is usually performed through a cognitive task analysis. Although used intermittently in the game design process, the literature did not indicate a usage of this tool for video game cognitive deconstruction indicating that this was a novel approach.

Initiating in the fall of 2012 as a follow-up to the previous study, ADL also began an extensive cognitive task analysis (CTA) of *Portal 2* with an expected completion date in June 2013. The first phase of the CTA was a preliminary analysis of the game to develop a lexicon and units of analysis for a consistent and cohesive approach to the game. As this study utilized two different research locations and researcher/assistants, this was a crucial first step. Initial outcomes of the CTA have produced an understanding of the mechanical steps, cognitive steps, micro-puzzles, affordances present, prerequisite knowledge, requisite knowledge, and sub-goals for each puzzle/level. In addition, the application of each design tenet is mapped to puzzle/level and micro-puzzles as appropriate.[51] This process allows a cognitive map to be developed overlaying the entire game describing the types of decision and potential and existing cognitive load for each puzzle and micro-puzzle. Relating this mapping back to the initial design tenets, the unit of analysis for further cognitive testing can be much more granular producing a CA profile of each design tenet.

After producing a validated set of design tenets for fostering CA, the next step is to use the level builder function of *Portal 2* for customized level design and develop-

ment. This will allow a custom set of levels focusing explicitly on the types of puzzles and micro-puzzles identified in the CTA to be developed. This custom version of the game would then be used for another experimental study with pre- and post-cognitive testing allowing for isolation of the game components meeting the CA design criteria for further validation. This set of validated design tenets would next be paired with exemplary game elements such as micro-puzzle combinations describing potential mechanics, dynamics, and aesthetics for incorporation into games specifically targeting CA. Also, these tenets will facilitate the design of a detailed rubric allowing existing games to be analyzed for their ability to foster CA within the players.

This process for deriving and validating design tenets for (CA) should, in theory, support other cognitive capabilities as well. The cognitive processes important for CA also support several 21st century skills and competencies. For example, critical thinking and problem solving are competencies crucial for high CA but are also recognized as important 21st century skills important unto themselves. Learning designs incorporating these skills are seen in the curriculum development world as important to fostering CA and general adaptability as a mode of thought. Also, *Portal 2* was chosen initially using a trade-off analysis based on five of the CA design tenets and interviews with expert gamers. The outstanding features initially pointing to *Portal 2* were the usage of a "warped space" type of environment characterized by portals lending itself to the idea of being cognitively adaptable to succeed. If another cognitive competency was desired, another game could have been considered. The first consideration in applying this methodology is that of the desired cognitive outcomes leading to the design tenets or desired game features. These features can then be used in a validation process much like that for CA resulting in assessment rubrics or a validated feature set for further serious game design and development.

Transforming Education

As society shifted solidly into the post-industrialist knowledge age sometimes described as the Third Wave,[52] the industrial model of education and learning began to shift. This meant that pedagogy, class size, and generally how learning was thought of gradually changed along with it (albeit at a slower pace). Education policy began to reflect the idea that student-teacher ratios within classrooms should be much lower allowing more individual attention on students by teachers. Mastery learning and other efficiency models were being replaced by models supporting a constructivist epistemology.[53] Over the past decade, "ways of thinking" are

seen as defining 21st century competencies and skills critically important to today's business, political, and military environments. Creativity and innovation, critical thinking, problem solving, decisionmaking, learning to learn, and metacognition are included in 21st century competencies and skills and are typically associated with deeper learning and higher order learning outcomes in education and training.[54] It is generally recognized that attaining these outcomes relies on a pedagogical approach beyond that of mastery learning but are compatible with and can be provided by learning experiences that are relevant, authentic, situated within a context, and problem-based.[55]

For 21st century learners, it is entirely possible that some of these learning experiences can be provided by commercial video games whose designers and publishers have invested heavily in providing games that are engaging, relevant, and immersive. However, to leverage these games there must be a method to determine which games are valuable and for what purpose. For example, Bjorn, Green and Bavelier found that action video game play enhances visual attention skills despite the actual narrative content of the video game.[56] The ADL *Portal 2* study found that higher executive function capabilities may be related to levels of video game play and playing *Portal 2* particularly raised levels of focused attention. Therefore it may be safe to say that playing targeted COTS video games could be used for generally cognitive skill increases thereby supporting deeper learning.

Educational and serious games are usually designed and developed to teach specific content which may be mostly declarative knowledge or, possibly, procedural knowledge to some degree. Although these and other games may have pronounced effects on cognitive capabilities, rarely are games evaluated for the cognitive outcomes they produce.[57] If educators had reliable methods for determining which video game could support the development of these cognitive skills, they could encourage their students to play those games with potentially little or no school district investment. Also, and along the same line, if games such as *Portal 2* have validated results in increasing cognitive capabilities supporting CA, warfighters could be encouraged to play it or others with the same properties in their down time with the resulting outcome of greater warfighter adaptability as the end result.

Notes

[1] Adaptability is already considered a key component of the 21st century skills demanded by the U.S. Department of Labor and the U.S. Department of Education. See *What Work Requires of Schools: A*

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Part Three

Perspectives on Joint Education

Nine educators from two panels share their perspectives about the forces that are influencing the content and structure of U.S. Professional Military Education (PME) and Joint Professional Military Education (JPME) and propose changes that can be implemented within the next few years. The challenges outlined in these six chapters have a common theme: that the changing strategic environment will present new and perhaps unprecedented challenges for future leaders and that the PME/JPME system must be structured to prepare leaders to meet them. While reinforcing the importance of education in preparing today's students for tomorrow's challenges, each paper identifies concrete areas for constructive and reflective thought as to how to transform the high–quality PME/JPME programs of today to meet the rigorous demands of the future. The authors recommend changes in the combined academic/military culture, a continued emphasis and commitment to 'interagency' education, and a fresh look at the relative advantages and disadvantages of resident and distance learning programs. The authors urge integrated approaches across people, processes, organizations, and technology to maximize effectiveness and effect the changes in mindsets and cultures that will be needed to meet the security challenges of an un-predictable and complex world.

Dr. Jerry West, an applied scientist and education advisor in to the Joint Pro-fessional Military Education Division of the Joint Staff in Washington, D.C., sum-marizes the 2013 *Review of Joint Education* (ROJE), published by the Chairman of the Joint Chiefs of Staff. Based on a year-long examination of the Joint Education continuum by academics from the joint and military service schools, the study as-sesses the Joint Education System's current ability to meet the future educational needs of the leaders of Joint Force 2020 and recommends changes to achieve the required educational outcomes.

In particular, the ROJE defines six new Desired Leader Attributes (DLAs) for future Joint Force leaders, ranging from an ability to understand the security environment and contributions of all instruments of national power to an ability to think critically and stra-tegically in applying joint warfighting principles and concepts to joint operations.

The ROJE also proposes the establishment of DLAs for senior enlisted person-nel; addresses the importance of career-long learning, and emphasizes the need to

explore advances in learning technologies. The ROJE establishes a foundation for future work that will develop more detailed educational outcomes for leaders in 2020. This additional work will lead to revisions to the Officer Professional Military Education Policy (OPMEP) and the creation of an Enlisted Professional Military Education Policy.

Building on this, Dr. West proposes a holistic approach that builds on a conceptual joint learning continuum that integrates four independent support pillars; joint individual training, JPME, joint experience, and self-development. His chapter then addresses ways to overcome impediments to implementing the JF 2020 DLAs such as culture, complexity, competencies, and collaborations (4-Cs).

Dr. Linton Wells II, acting Director of Research and Director of the Center for Technology and National Security Policy (CTNSP) at NDU, along with co-authors, Dr. Cynthia Watson, Professor of Security at the U.S. National War College, and Dr. Paulette Robinson, Deputy Director of CTNSP for Advanced Education Initiatives focused on the role of researchers in strategic leader development at NDU. They note that, in the traditional sense, leader development is thought of as being a mix of training, experiential learning, and education, but that new technologies and approaches can help bridge the boundaries between the areas and increase the focus of learning in any context. The paper discusses four ways in which research at NDU can contribute to strategic leader development and how to build bridges between the teaching and research communities at the University.

Dr. Joan Johnson-Freese of the Naval War College, writes forthrightly about several critical issues in military education. She highlights the tendency in many military education communities to focus more on training than education and notes the importance of emphasizing education to engender the understanding necessary for leadership and to explore opportunities for transformation. She also describes the challenge of melding two professional cultures that are not intrinsically compatible, the academic and the military. This often has the effect of favoring the military perspective or uniformed personnel with less weight being given to educational or academic criteria. She argues that academic achievement should not be assumed because of a parallel, structured military advancement path for military professionals, for example. The credibility of JPME institutions is also undercut and the educational experience devalued if each student is assured success. She recommends building strong, diverse faculties with credible academic rank systems that are comparable, if not necessarily identical, to civilian academic institutions

in order to attract academic talent. Involvement in research assures that faculty members remain current with new knowledge in their field and can speak beyond a superficial set of PowerPoint slides. Academic freedom is important to maintaining quality faculty and ensuring that the organizational cultures of military educational institutions foster 'intellectual agility.'

Colonel Theodore C. Hailes (Ret.) of the U.S. Air University posits that three major forces will necessitate change within the U.S. Department of Defense's educational processes if the military educational system is to remain relevant and vibrant. These drivers of change are: 1) technological change that is affecting all aspects of communication and accelerating the pace of geo-political-economic events; 2) changes in the strategic landscape that present new security threats; and 3) changes in the nature of warfare from episodic engagement to continuous competition and conflict.

Colonel Hailes notes that scientific change is accelerating at exponential rates in many areas and that planning and reaction times will continue to shrink as a consequence. He further notes that the ability of technology to empower individuals will fundamentally reshape the concept of national power and the use of force. He also cites the importance of a concept that he refers to as collective intelligence. This concept posits that individuals learn from others and that as the speed of exchange of information increases, collective learning will accelerate as well. The Internet and ubiquitous data will produce new information, opportunities, and threats in combinations that are hard to project and plan for using traditional military strategic planning processes. For example, the rapid development of computing (machine) technology will lead to near-autonomous systems that will reshape the strategic landscape over the next decades. Further, developments in synthetic biology, nanotechnology, and cyber hold both promise for improvement of the human condition and profound threats. Within competitive commercial markets, it may be hard to identify either a threat or a possible hostile action in these emerging technologies.

Colonel Hailes concludes his paper by observing that current doctrine-based planning and educational systems within the Defense Department have served the nation well in the past, but may not be agile or responsive enough to meet the challenges presented by the external factors now driving change. He suggests that there is fertile ground for educational reform in the Department.

Colonel John R. Carter (Ret.) argues that that Distance Learning (DL) should no longer be seen as a less rigorous and less preferred alternative to resident programs in Officer Professional Military Education (OPME). Existing policies and informal

selection guidance reinforce the assumption that attendance at a resident PME program is a "career discriminator, especially for field grade officers." In fact, most active duty officers and almost all National Guard or reservists will have PME available to them only by way of DL courses. Colonel Carter advocates examining both delivery methods with an unbiased view to customize career-long learning and the development of critical thinking skills by leveraging improved educational technology and advances in science of learning. He also calls for a redesign of personnel policies to emphasize education, including DL, as a development activity rather than as a means to stratify the force, without diminishing the important role of residency programs in general and in preparing officers for the most demanding leadership positions as commanders and key staffers.

Colonel Carter also reviews the history of DL in the Air Force, noting the innovation that began in 2007 with an online Master's program offered by the Air Command and Staff College, followed by innovations in delivery and content in all Air Force OPME schools. Presently, the Spaatz Center for Officer Education at Maxwell Air Force Base is transforming DL by creating a menu of graduate-level courses to meet officers' developmental needs in content and availability in time. Recommendations for both education and outcomes are based on observed performance in the field. The structure and content of the programs are driven by a competency model.

Dr. Ralph Doughty and Mr. Ralph Erwin emphasize the critical importance of bringing security professionals from different agencies together to learn side-by-side in courses and seminars to give them an opportunity to gain an understanding of how their counterparts tend to think and operate. Their paper presents the history of interagency collaboration, beginning in 1782 with the British Foreign Service working closely with the British Diplomatic Service, and then later with the British Military.

The authors continue by emphasizing the importance of collaboration across a combination of government agencies and non-government agencies, including civic organizations and commercial enterprises, for the successful and sustainable implementation of programs to maintain security for a nation or region. whole-of-government approaches are necessary but not sufficient—non-governmental agencies and businesses need to be present at the table to share their understanding of entrepreneurship, a competency that is a critical component to building regional stability. They also underscore how relationships developed among individuals from different partner organizations participating in interagency education

can be beneficial in real-world situations—relationships that can only be developed through face-to-face interactions.

Finally they argue that, given the nature of 21st century security challenges, it is necessary to make an unwavering commitment to interagency education and to use innovative approaches to continue this critical dimension of Joint Education despite current budget constraints.

Chapter 8

A Holistic Approach for Institutionalizing JF 2020 Leader Development

Jerry West

"If you ever decide that you've got the definition [of leadership] about right, you're wrong.
 It's something that requires constant study and constant work…"
General Martin E. Dempsey, 18th Chairman of the Joint Chiefs Staff.[1]

Introduction

The need for an institutional approach to adopt the Desired Leader Attributes of *Joint Force 2020* is the subject of this chapter.[2] The *2012 Strategic Direction to the Joint Force* by the Chairman of the Joint Chiefs, General Martin E. Dempsey, emphasizes the role of Joint Professional Military Education (JPME) in leading the renewal of the military profession of arms, institutionalizing leader development, and incorporating the lessons learned from a decade of war.[3] Toward that objective, the Military Education Coordination Council (MECC)[4] completed a Chairman-directed review of joint education and recommended enterprise-wide adoption of a set of desired leader attributes (DLAs) for officers informed by the reports, a *Decade of War* and the *Capstone Concept for Joint Operations: Joint Force 2020*.[5] The DLAs provide institutions with a broad competency-based guidepost for developing officers of JF 2020 with the ability to: 1) Understand the security environment and the contributions of all instruments of national power; 2) Anticipate and respond to surprise and uncertainty; 3) Anticipate and recognize change and lead transitions; 4) Operate on intent through trust, empowerment, and understanding (*Mission Command*); 5) Make ethical decisions based on the shared values of the Profession of Arms; and 6) Think critically and strategically in applying joint warfighting principles and concepts to joint opera-

tions.[6] DLAs for senior Non-Commissioned Officers (NCOs) are in development by the Enlisted Military Education Review Council and were not available at the time of release of this publication. However, while the Leader Attributes for NCOs will differ from officer Attributes, the need for a holistic approach for leader development applies to senior NCOs as well.

The need for a holistic approach to institutionalize the DLAs stems from the Chairman's June 28, 2013 Memorandum to the Services Chiefs, Combatant Commanders, Chief of National Guard Bureau, and Joint Staff Directorates:

> *After reviewing the MECC report's findings and recommendations, I approved a set of DLAs for adoption by the joint community as guideposts for joint officer leader development for JF2020 (an extract from the report is attached). This effort has significant implications as we move forward in meeting my intent to institutionalize the essential knowledge, skills, attributes, and behaviors that define our profession…*[7]

The Chairman's Memorandum further underscored the interdependent roles to be required of stakeholders representing training, education, experience and personnel to achieve DLA adoption. While these officer DLAs grew out of the Joint Education Review, education is only part of the solution to DLA adoption with training and experience expected to play a large role. The joint training community must lead DLA deconstruction and competency development as they refine current, and create future, training programs. Joint functional communities should incorporate the DLAs into their education and training programs as appropriate. Personnel management systems must also evolve to support DLA adoption as we seek to develop JF2020 leaders across a continuum of learning.[8]

To meet the Chairman's intent, rationale is provided below for a holistic approach for institutionalizing JF 2020 DLAs.

Need for a Holistic Approach

The Congressionally-mandated Joint Officer Management System and the Joint Learning Continuum provide the established conceptual and legislative framework for institutionalizing JF 2020 leader development. As shown in Figure 1, the Continuum comprises four interdependent supporting pillars: education, training, experience, and self-development.[9] In its broadest sense, *education* conveys general bodies

of knowledge and develops habits of mind applicable to a wide spectrum of endeavors. As viewed through the prism of "Learning Domains," education is largely defined through the cognitive domain and fosters diverse perspectives, critical analysis, abstract reasoning, comfort with ambiguity and uncertainty, and innovative thinking, particularly with respect to complex, nonlinear problems. *Training* is defined as instruction and applied exercises for acquiring and retaining competencies, knowledge, skills, abilities, and attitudes, necessary to complete specific tasks. In contrast with education, training is focused largely through the psychomotor domain on the instruction of personnel to enhance their capacity to perform specific functions and tasks. *Experience* reflects the successful application of what individuals learn in operational assignments, joint training, joint education, and self-development. Experience is synonymous with Joint warfighting and is not academic. It is the application of the acquired knowledge, skills, abilities, and attitudes in an operational environment where increased levels of experience correspond directly with increased levels of proficiency and performance of mission tasks. *Self-development* empowers individuals with responsibility to actively participate in their own professional growth through both formal and informal education, training and experience. Self-study in the pursuit of knowledge accelerates individual development, as well as allows flexibility and accommodation to individual circumstances of need, situation, and desire.[10]

While providing the conceptual and legislative framework, the Management/ Continuum model noted above and shown below in Figure 1 lacks the context required for a holistic approach DLA adoption.

Figure 1: Joint Learning Continuum Model for Professional Leader Development
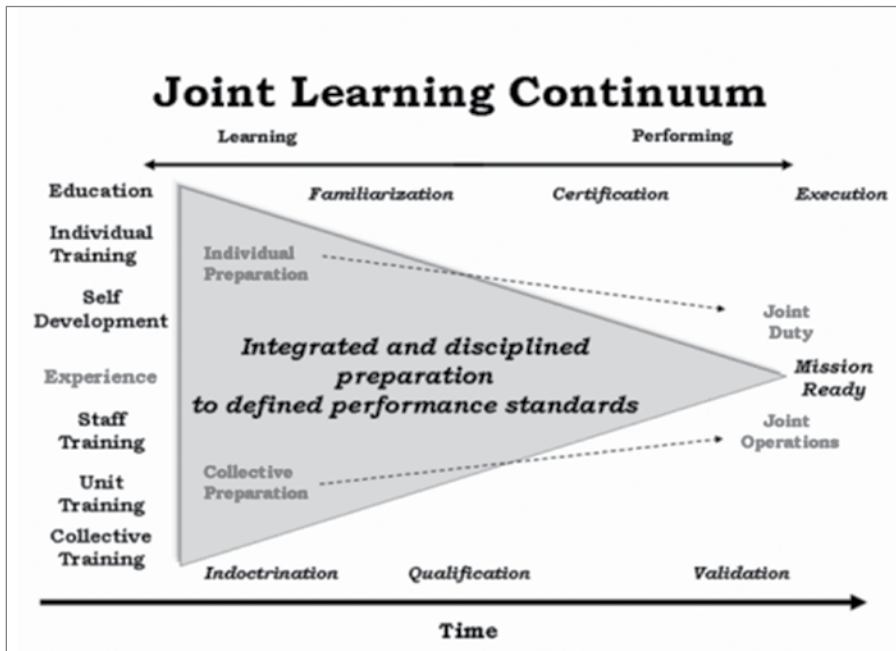
A holistic approach means centralized Joint Staff Joint Force Development guidance and decentralized execution across the services and joint enterprise. A holistic approach emphasizes unity of effort to minimize redundancies and ensures synergistic development across the joint enterprise. A holistic approach encompasses best practices for competency-based leader development. Moreover, a holistic approach requires the support of senior stakeholders to ensure that plans and programs for DLA adoption are established across the joint enterprise. A framework is presented below in Figure 2 that builds on the established conceptual and legislative framework for joint leader development.

Figure 2: Contextual Framework for a Holistic JF2020 Desired Leader Attributes Adoption Model

As shown in Figure 2, a contextual framework for a holistic approach to DLA adoption is centered on the Attributes and incorporates institutional impediments to their adoption encompassing *complexity*, *culture*, *competencies*, *and collaborations* (4-Cs). While other impediments to adoption exist to include innovation, cost, timelines, policies and legislation, the *4-Cs* represent the most significant and are informed by the Review of Joint Education findings. Considerations for overcoming each of the impediments to DLA adoption are presented in the discussion that follows beginning with *complexity*.

Complexity

As the security environment becomes more complex with increasing challenges to our ethical dilemmas, our understanding of how to deal with complexity must increase. The Chairman's *Joint Education White Paper* emphasized the important role of joint education in developing leaders who are comfortable with complexity, uncertainty, and decision-making in complex security environments.[11] Complexity refers to conditions of a system which is integrated and yet too rich and varied for us to un-

derstand in simple, common, mechanistic or linear ways. A basic premise of complex systems is that the future is essentially unknowable. While we teach and understand many parts of the system, the larger and more intricately related phenomena can only be understood by principles and patterns—not in detail.[12]

The effectiveness of JPME programs to prepare individuals to deal with complexity was addressed as part of the gap analysis performed under the Review of Joint Education. Figures 3 and 4, extracted from the Review Report, summarize the effectiveness of JMPE schools to achieve education outcomes associated with the six JF 2020 DLAs. Gap analysis results from 27 programs revealed significant gaps in current JPME programs to teach and assess higher order complexity outcomes associated with DLA 2 (*ability to anticipate and respond to surprise and uncertainty*) and with DLA 4 (*ability to operate on intent through trust empowerment and understanding).* No gaps were identified in the effectiveness of JPME programs to develop leaders with DLAs associated with lower levels of complexity such as DLA 6 *(ability to think critically and strategically in applying joint warfighting principles and concepts to joint operations*). Moreover, while the results showed a majority of in-resident JPME curriculums are expected to teach each of the DLAs at some cognitive level, current capabilities of JPME programs to address complex decision-making at higher cognitive levels are lacking and must be improved.[13]

A review of the literature shows that significant progress has been made in the last ten years to model decision-making in complex environments.[14] In the private sector, the bulk of current education, training, and coaching to deal with complexity is focused on traditional command and control strategies of organizations that constrain dynamics in order to maintain states of equilibrium.[15] However, in higher education, complex systems are being modeled and studied through the lens of complexity theory to provide a useful framework for instruction while challenging cultural biases and some of the more traditional approaches to learning and competency-based education and training.[16]

Figure 3. Review of Joint Education Findings

JF 2020 Desired Leader Attributes	Curriculum/ OPMEP (Do We Teach it?)	Delivery (How well we teach it and deliver it?)	Assessment (Can we measure it?)	Findings
DLA 1. Ability to understand the security environment and the contributions of all instruments of national power.	✓	✓	✓	No Gaps in curriculum. No changes required.
DLA 6. Ability to think critically and strategically and apply joint war-fighting principles and concepts in joint operations spanning all levels of warfare.	✓	✓	✓	No Gaps in curriculum. No changes required. Improvements needed in assessments.
DLA 5. Ability to make ethical decisions based on the shared values of the Profession of Arms.	✓	✓	?	No Gaps; Higher cognitive level may be required; improvements needed in assessments.
DLA 3. Ability to anticipate and recognize change and lead transitions.	✓	✓	?	Same as above.
DLA 2. Ability to anticipate and respond to surprise and uncertainty	✓	?	?	Educational and experiential attributes require educator and supervisor input to assess effectiveness.
DLA 4. Ability to operate on intent through trust empowerment and understanding.	✓	?	?	Same as above

Furthermore, there is a large body of laboratory and real world evidence of recent progress in complexity modeling based on Adaptive Stance Theory.[17] Underpinned by both complexity science and a theoretical neuropsychological model, it may now be possible to cultivate collaborations with civilian institutions to bring about a more effective methodological framework for managing, creating, shaping, and interacting with complexity. In addition, an experimental approach to teaching more effective decision making through coaching has been "trialed" by academic researchers, and has led to the development of a more detailed research agenda based on the encouraging results shown.[18]

Whether complexity theory can be incorporated into JPME programs and applied in joint training is unknown and represents a topic for consideration. However, a holistic strategy for DLA adoption should embrace DLA complexity challenges as part of faculty development initiatives. Through collaborations with academia and industry, JPME faculty can become comfortable with complex systems and evolving pedagogical strategies that combine modeling, teaching and coaching. Faculty members must, however, become open to collaborations with industry as well as professionals representing the modeling and simulation community to ensure that JPME faculty will understand the fluid, flexible, and ever changing interconnected nature of

complex systems. By embracing higher order complexity teaching strategies, faculty will ensure that education outcomes associated with decision-making in complex security environments are achieved.

Figure 4. Current Capabilities of JPME Curriculumns to Address JF2020 DLA Complexity.
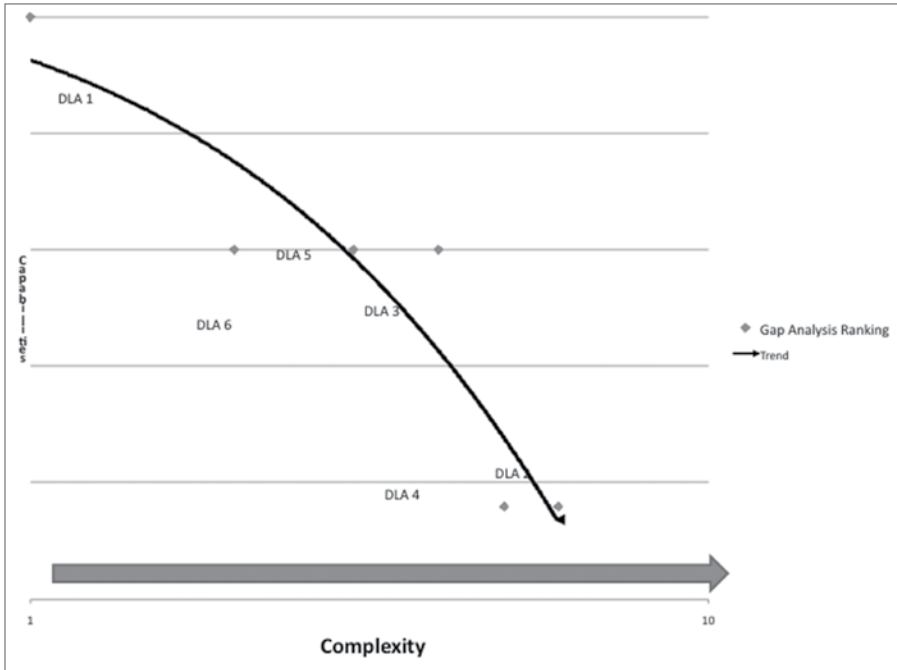
Culture

A holistic strategy for DLA adoption must also embrace cultural differences to overcome cultural biases that may persist across military organizations. Overcoming cultural biases among the military has been central to joint leader development dating back to the historic Goldwater-Nichols Act of 1987.[19] The difficulty in addressing culture as part of a holistic adoption strategy is that, from a scholarly fashion, its influence is almost always the result of long-term factors rarely measurable and often obscure even to historians.

Edgard Schein defines culture as "A pattern of shared basic assumptions that a group has learned as it solved its problems…that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to

perceive, think, and feel in relation to those problems."[20] The impact of cultural biases on adoption reforms in education and training are well-documented in the literature as well as the importance of increased senior leadership involvement through unity of effort to remove cultural biases.[21]

DLA adoption—will naturally cause tensions to arise among training and education professionals calling for a holistic integrated approach to institutionalize the DLAs.

The Review of Joint Education findings shed light on inherent tensions that exist among professional educators regarding competency-based education strategies. The consensus from professional educators who participated in the Review was that most of the gaps identified in the gap analysis are associated with learning outcomes that require more skill-training and competency-based strategies and reflect training vice education actions to address deficiencies. However, leader development training and education are not mutually exclusive and can be integrated as part of a holistic DLA adoption strategy without destroying institutional values. Virtually all military schools and professional development programs include elements of both education and training in their academic programs.[22] Preparing leaders to be comfortable with decision-making in more complex security environments requires an integrated approach and, at a minimum, coordination of joint individual training and JPME to develop synergies as personnel develop individually over time, acquiring and performing higher-order thinking and complex decision-making as their careers advance. From the learner's perspective, the synergy received from a continuum of learning that is competency-based and fully-integrated across education, training, experience and personnel could lead to learning outcomes that are unachievable from separate, stovepiped and episodic strategies of leader development. To achieve these outcomes, senior leader involvement will be required to institutionalize leader development through an integrated competency-based approach that requires unity of effort among education and training programs.

Competencies

There is a substantial body of research available regarding competency-based strategies and the importance of connecting competencies, learning outcomes and leadership development with organizational success.[23] In the private sector, there is no more important task with regard to leadership development than identifying the competencies and learning outcomes that comprise leadership. However, to date, within the military there has not been agreement regarding just what are the joint

leadership competencies that should be taught and learned. This could change with stakeholder commitment to a competency-based DLA adoption strategy that institutionalizes leader development across JPME and joint individual training programs.[24]

The military profession is defined by broad competencies expressed as values, ethics, standards, code of conduct, skills, and desired leader attributes. Leader competencies are addressed in all aspects of Joint Force Development (Doctrine, Education, Training, Lessons Learned and Concepts to Capabilities). For example, Joint Doctrine provides the primary source of timeless aspects of character and competence required of leaders in our profession, calling for all members of the force to internalize and embody *Duty, Honor, Courage, Integrity* and *Selfless Service*.[25] The current Officer Professional Military Education Policy (OPMEP),[26] reflects joint leader competencies introduced by the 16th Chairman, General Peter Pace, USMC, in *2005 Vision for Joint Officer Development,* namely; joint officers are built upon service leaders competencies and are expected to be *strategically-minded, critical-thinkers*, and *skilled joint warfighters.* [27] Human resource professionals rely on competencies to determine abilities an individual possesses in order to compare those to the ones that need further development for success in a leadership role. By looking at current competencies and comparing those to the skills necessary to fill a leadership position, personnel can make better informed decisions in hiring, developing and promoting leaders.

So what are the challenges to the adoption of a competency-based approach for JF 2020 leader development? The findings from the Review of Joint Education (RJE) underscore the challenges of stakeholder adoption of a competency-based approach for JF 2020 leader development. A considerable effort by professional educators was devoted to deconstructing the DLAs into education outcomes in support of the gap analysis. A total of 32 sub-attributes or notional education outcomes were proposed to determine current capabilities to teach and assess outcomes associated with each of the DLAs. Outcomes associated with DLA 2 (*requirements to teach surprise and uncertainty*) and DLA 4 (*requirements to execute Mission Command at all echelons*) were noted as the most difficult to deconstruct into educational outcomes. The large effort notwithstanding, the Review findings were inconclusive regarding recommendations on education outcomes owing to the lack of consensus on the validity of proposed education outcomes.[28]

Nevertheless, the Review underscored the need for a competency-based approach involving professionals representing education, training, cognitive and job

task analysis disciplines to deconstruct DLAs into learning outcomes that can be validated for JF 2020 leader development. Such an effort may not be possible in the immediate future owing to the complexity of deconstructing the DLAs in to learning outcomes and cultural biases among educators and may require a long-term approach. However, to fully meet the Chairman's intent to institutionalize JF 2020 leader development, an integrated competency-based approach for DLA adoption is worthy of consideration by stakeholders. Table 1 summarizes the benefits of an integrated competency-based approach for JF 2020 leader development.

Table 1. Benefits of an Integrated Comptency-based Approach for Adoption of JF2020 Desired Leader Attributes

BENEFACTORS (OFFICERS/ENLISTED)
• Know what is expected at each stage of their career
• Recognize skills, knowledge, and behaviors vital to JF2020 missions.
• Have a baseline for self-development.
• Use attributes and outcomes to improve in current assignments, or how to prepare for future assignments
STAKEHOLDERS (SERVICES/COMBATANT COMMANDS)
• Have clear, fair, and unbiased statements to use when discussing education outcomes and performance required in joint assignments, which may also help combatant commands in setting job objectives for staffs.
• Have a common language to use when giving individuals feedback on performance
• Identify individual learned or development needs, as well as resources, meaning that the institutions can better structure curricula for officer/enlisted development programs
• Have a set of requirements for a lifelong learning model that informs career development paths.
• Understand Chairsman's intent for education outcomes associated with JF2020

METRICS, GOVERNANCE, AND OVERSIGHT (JOINT STAFF J7)

- Provide guidance and intent that contribute to and helps to shape the culture of JF2020.
- Inform education goals to meet JF2020 leader development, which helps with targeting resources for staff learning and development.
- Improve confidence that the Services will recruit, develop, and promote the right people, who have the core skills and qualities needed in our leaders to meet current and future goals.
- Enable gap analysis to inform policy decisions to ensure that education and training programs are aligned to joint leader development requirements.

Collaborations

There are obvious economic benefits to organizations that embrace collaborations in the current resource-constrained climate. However, the skills, knowledge, and information gained through collaborations to strengthen and bring credibility to an organization are equally important as are the economic benefits. Civilian graduate level education is placing a growing emphasis on collaborations without compromising the delivery of deep knowledge required in chosen disciplines. In addition, civilian graduate schools are emphasizing integrative interdisciplinary education through collaborations.[29] These programs suggest a cultural change in civilian graduate education for students, faculty, and institutions which may apply to joint education programs as well.

As discussed previously, the tasks and responsibilities associated with institutionalizing JF 2020 leader development are simply too great for one community to undertake and will require collaborations to achieve the desired institutional objectives. Tasks include: 1) the need to deconstruct and translate the DLAs into competencies and outcomes that can be taught, trained and assessed; 2) research of innovative instructional approaches to deal with complexity; 3) build partnerships to deal with gaps in current programs and; 4) report and track progress across over a continuum of learning.

Joint Staff efforts underway are prescriptive of the role played by senior leadership to advance collaborations that address gaps in current capabilities of joint education and training programs to achieve complex decision-making outcomes at higher cognitive levels.

Specifically, professional staffers from Joint Staff J7 Joint and Coalition Warfare are engaged in collaborations which could be instrumental in closing training and education gaps associated with DLA 4 (*Mission Command*) learning outcomes.[30] J7 trainers and experts in the field of cognitive engineering research have identified competency-based approaches for institutionalizing (teaching and training) cognitive readiness competencies across education and training programs as part of on-going Joint Staff J7 collaborations.[31] In addition to the research performed as part of this effort, this author has engaged in discussions with researchers across academia, and the science and technologies regarding opportunities to identify collaborations that could improve JPME faculty understanding the potential of complexity theory for instruction and measurement purposes. On-going discussions with researchers comprising the Advanced Distributive Learning Next Generation Learner Team are focused on cognitive adaptability and how games can be leveraged in JPME and individual training for learning and understanding cognitive capabilities to respond to uncertainty and complexity while monitoring one's own thinking processes. Such collaborations, could inform faculty development initiatives devoted to improving faculty understanding of higher-order, complex decision-making learning strategies.[32]

A review of Services' initiatives for JF 2020 leader development suggests that future education and training programs will evolve to a learner-centric continuum of learning that develops critical competencies in soldiers and leaders through rigorous, relevant, tailored, outcome-oriented training and education from a responsive, accessible, and adaptable delivery system.[33] With only a small portion of an officer's military career being devoted to formal in-resident education and training, self-development as part of a life-long learning strategy using online-technologies will be expected to play a more significant role in future joint leader development. Toward this objective, Joint Education Review findings emphasized the need for a follow-on study by the National Defense University to identify emerging learning technologies and collaborations required to build a life-long learning capability for JF 2020 leader development.[34] Collaborations will be essential to leverage innovative approaches to ensure that emerging learning technologies and instructional strategies can be made accessible to life-long learners in a persistent fiscally-constrained security environment.

Summary

In summary, the adoption of JF 2020 officer DLAs is a critical component of Chairman's intent to institutionalize JF 2020 leader development across joint educa-

tion and training programs. Toward this objective, a holistic approach to achieving the Chairman's intent has been presented that introduces a JF 2020 DLA a contextual framework to the established Management/Continuum model for joint leader development. Key components of the contextual framework are institutional impediments to be overcome in achieving holistic DLA adoption encompassing complexity, culture, competencies and collaborations. While informed by many of the findings of Chairman's Review of Joint Education, the approach represents soley the views of the author to motivate stakeholder discussion and should not be interpreted as an official Joint Staff Joint Force Development position.

Notes

[1] Martin E. Dempsey, Speech given to *The Pentagon Channel*, Washington, DC, October 25, 2012, available at <www.jcs.mil/speech.aspx?id=1737?>.

[2] Martin E. Dempsey, Memo, *Appealing Performance-Based and Adverse Actions Against Employees Covered by the Defense Civilian Intelligence Personnel System (DCIPS) in Organizations Serviced by Washington Headquarters Services (WHS)*, CM 0166-13, June 28, 2013, available at <www.dtic.mil/whs/directives/corres/pdf/DTM-13-006.pdf>; *Desired Leader Attributes for Joint Force 2020*, PowerPoint, undated, available at <www.ndu.edu/info/BOV/2013May/Briefings/Goal%204%20for%20BOV.pdf>.

[3] *Chairman's Strategic Direction to the Joint Force* (Washington, DC: Joint Chiefs of Staff, February 6, 2012), available at <www.jcs.mil//content/files/2012-02/021312101535_CJCS_Strategic_Direction_to_the_Joint_Force_--_13_Feb_2012.pdf>.

[4] The MECC is comprised of the Joint Staff Joint Force Development Director (DJ-7); the presidents, commandants, and directors of the Joint and Service universities and colleges; and the heads of any other JPME-accredited institutions. The MECC also includes a MECC Working Group comprised of Dean's level/O-6 representatives of the MECC principals and the Deputy Director Joint Staff/J-7 for Joint Education and Doctrine that addresses educational issues of interest to the joint education community and promotes cooperation and collaboration among the MECC member institutions.

[5] *Decade of War, Volume 1: Enduring Lessons from the Past Decade of Operations* (Washington, DC: Joint Chiefs of Staff, J7, June 15, 2012), available at <http://blogs.defensenews.com/saxotech-access/pdfs/decade-of-war-lessons-learned.pdf>; *Capstone Concept for Joint Operations: Joint Force* 2020 (Washington, DC: Department of Defense, September 10, 2012), available at <www.jcs.mil/content/files/2012-09/092812122654_CCJO_JF2020_FINAL.pdf>.

[6] *The Review of Joint Education, 2013* (Washington, DC: Joint Chiefs of Staff, June 24, 2013), available at <http://intranet.ndu.edu/aaffairs/jpme.cfm>.

[7] CM 0166-13; *Desired Leader Attributes for Joint Force 2020*.

[8] Ibid.

[9] Interdependence means effective integration of education, training, self-development, and experience to achieve performance based outcomes.

[10] *Joint Training Policy and Guidance for the Armed Forces of the United States*, CJCSI 3500.01G (Washington, DC: Joint Chiefs of Staff, March 15, 2012), available at <www.dtic.mil/doctrine/training/cjcsi3500_01g.pdf>.

[11] *Joint Education White Paper* (Washington, DC, Joint Chiefs of Staff, June 25, 2012).

[12] Santa Fé Group, *Complexity Theory: A Perspective on Education (*Battram, 1998).

[13] *The Review of Joint Education, 2013* (Washington, DC: Joint Chiefs of Staff, June 24, 2013), available at <http://intranet.ndu.edu/aaffairs/jpme.cfm>.

[14] Malcolm Cook, Jan Noyes, and Yvonne Masakowski, eds., *Decision Making in Complex Environments* (Burlington, VA: Ashgate Publishing Company, 2012).

[15] Eddie Oben, "Smart Failure for a Fast-changing World," *TEDTalks*, June 2012, available at <www.ted.com/talks/eddie_obeng_smart_failure_for_a_fast_changing_world.html>.

[16] Keith Morrison, "Educational Philosophy and the Challenge of Complexity Theory," *Educational Philosophy and Theory* 40, no. 1 (February 2008), 19-34.

[17] Anne-Marie Grisogono and Vanja Radenovic, *The Adaptive Stance: Steps Towards Teaching more Effective Complex Decision-making* (Canberra, Australia: Defence Science and Technology Organisation, 2010).

[18] Anne-Marie Grisogono, *The Implications of Complex Adaptive Systems Theory for Command and Control*, CCRTS, San Diego, June 2006; Anne-Marie Grisogono, *Causal & Influence Networks in Complex Systems*, DOC – AG14 - C&IN #4-2010 (Canberra, Australia: The Technical Cooperation Program, May 2010), available at <http://operationaladaptation.com/unify_uploads/files/Grisogono%202010%20Causal%20and%20Influence%20Networks%20in%20Complex%20Systems.doc>.

[19] *Goldwater-Nichols Act of 1986*, available at <www.au.af.mil/au/awc/awcgate/congress/title_10.htm>

[20] Edgar H. Schein, *Organizational Culture and Leadership*, 2nd Ed. (San Francisco, CA: Jossey-Brass, 1992).

[21] H.M. Levin, *Learning from School Reform*, Prepared for the International Conference on Rejuvenating Schools Through Partnership, May 22-24, 2001, available at *<www.tc.columbia.edu/centers/coce/pdf_files/b4.pdf>*.

[22] *Officer Professional Military Education Policy*, CJCS 1800.1D (Washington, DC: Joint Chiefs of Staff, September 15, 2011), available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf>.

[23] Stewart L. Tubbs, and Eric Schulz, "Exploring a Taxonomy of Global Leadership Competencies and Meta-competencies," *The Journal of American Academy of Business* 8, No. 2 (March 2006).

[24] *Chairman's Strategic Direction to the Force* (Washington, DC: Joint Chiefs of Staff, February, 2011), available at <www.jcs.mil//content/files/2012-02/021312101535_CJCS_Strategic_Direction_to_the_Joint_Force_--_13_Feb_2012.pdf>.

[25] Joint Publication 1, *Doctrine for the Armed Forces of the United States* (Washington, DC: Joint Chiefs of Staff, March 23, 2013), B-1, available at <www.dtic.mil/doctrine/new_pubs/jp1.pdf>.

[26] *Officer Professional Military Education Policy (OPMEP)* (Washington, DC: Joint Chiefs of Staff, December 15, 2011), available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf>.

[27] *CJCS Vision for Joint Officer Development* (Washington, DC: Joint Chiefs of Staff, November 2005), available at <www.dtic.mil/doctrine/education/officer_JPME/cjcsvision_jod.pdf>.

[28] *The Review of Joint Education, 2013* (Washington, DC: Joint Chiefs of Staff, June 24, 2013), available at <http://intranet.ndu.edu/aaffairs/jpme.cfm>.

[29] *Joint Degrees, Dual Degrees, and International Research* (Washington, DC: Council of Graduate Schools, January 1, 2010).

[30] Cognitive readiness describes the mental preparation an individual must establish and sustain to perform effectively in the complex and unpredictable environment of modern military operations. It encompasses a range of intellectual, affective, and psychosocial skills and their successful execution in

stressful, ambiguous, and unpredictable conditions at both the individual and team levels.

[31] D. Fautua and S. Schatz, "Cognitive Readiness and the Challenge of Institutionalizing the "New" Versus "News"," *Journal of Cognitive Engineering and Decision Making* 6, no. 3 (2012), 276–298.

[32] Boyle, E., van Rosmalen, P., MacArthur, E., Connolly, T., Hainey, T., Johnston, B., Ger, P. M., Manjon, B. F., Karki, A., Pennanen, T., Manea, M., & Starr, K. (2012, October). *Cognitive Task Analysis (CTA) in the Continuing/Higher Education Methods Using Games (CHERMUG) Project. The Cognition of Gameplay, Paper presented at the 6th Annual European Conference on Games-Based Learning*, Cork, Ireland, UK.

[33] See Amy L. Robinson, "TRADOC Commander Outlines Transition to Army of the Future," www.Army.mil, June 25, 2012, available at <www.army.mil/article/82469/>. Author was at conference.

[34] Advanced Distributed Learning Initiative, part of the Department of Defense Office of the Deputy Assistant Secretary of Defense (Readiness), was established under Executive Order 13111 was signed on January 12, 1999 by President William J. Clinton, to ensure that the Department and other federal employees take full advantage of technological advances in order to acquire the skills and learning needed to succeed in an ever-changing workplace.

Chapter 9

Integrating Research into Strategic Leader Development: Experiences at the National Defense University

Linton Wells II, Cynthia Watson, and Paulette Robinson

Leader development has long been important to the U.S. military. Officer leaders typically are developed through an education continuum[1] that runs from pre-commissioning instruction to courses for flag and general officers. This Professional Military Education (PME) continuum is reinforced by training designed for specific duty assignments and experiential learning acquired while "on the job." For the most part, early career education, career-long training, and experiential learning are accomplished through individual military department (Army, Navy, Air Force) channels.[2] However, officers need to be proficient in cross-cutting, national security-related topics of concern to more than one U.S. military Service, other U.S. Government departments and agencies, military forces, agencies from other countries, and non-governmental persons or entities. These are referred to a "Joint" matters.[3]

The National Defense University's mission is to support "…the joint warfighter by providing rigorous Joint Professional Military Education (JPME)[4] to members of the U.S. Armed Forces and select others in order to develop leaders that have the ability to operate and creatively think in an unpredictable and complex world."[5] The "selected others" includes students from civilian U.S. Government departments and agencies, foreign students, and some private sector participants, making it a diverse student body.

The chapter consists of four parts. It begins by reviewing how joint education, with a particular focus on strategic leadership, is taught today at NDU,[6] and how the NDU research faculty[7] previously has been involved in these areas. The focus then shifts to two evaluations of military education: a report by the Military Education Coordination Council (MECC)[8] on the review of U.S. Joint Education that was done during 2012-13, and a summary of initiatives in military education by member and

partner states of the North Atlantic Treaty Organization (NATO). The former will form the basis for many future U.S. education outcomes while the latter shows how other nations are dealing with similar issues. NDU's Advanced Education Research Initiative (AERI) is then examined as a means to leverage the explosion of innovation underway in private adult education. The chapter ends by describing opportunities for increased collaboration between the teaching and research components at NDU to enhance strategic leader education going forward.

Present Approaches to Strategic Leader Education at NDU and the Current Role of Research

Prior to receiving a new mission statement in 2012, NDU had three co-equal objectives: teaching, research, and outreach. Each function was equally regarded and represented by independent organizational structures. The research faculty primarily did applied research projects for various sponsors within the U.S. Department of Defense (DOD) and other federal agencies. These contributed to the overall store of knowledge, largely policy-related, and were well received in many quarters.[9] However, research rarely contributed directly either to shaping classroom curricula or to helping students master materials. In part this was because the research faculty often did not understand the lead times that teachers needed to prepare course materials and familiarize other seminar leads with them, ensuring the teaching and research sides of the university were not well linked. This bifurcation fostered past misunderstandings on both sides and a lack of appreciation for each other's contributions. However, as will be shown below, there are several ways ahead for the teaching and research faculties to work together more closely.

TEACHING

The seminar is the primary teaching method at NDU.[10] Faculty members must be able to *apply* their subject matter expertise with agility to address the intellectual and group dynamics of the seminar, which often includes senior-level students with extensive operational experience. This is not the same as developing and teaching the in-depth mastery of a single subject.

Strategic leadership is taught in different ways across the university, due to combinations of differing college missions, guidance on learning objectives, and other factors. All academic programs at NDU are accredited through the Middle States Commission on Higher Education. JPME curricula at the National War College

(NWC),[11] the Eisenhower School[12] and Joint Forces Staff College are delivered within the framework of the Officer Professional Military Education Policy (OPMEP),[13] which specifies learning areas that must be included in the curriculum of every JPME school. For NWC and Eisenhower there are six similar, but tailored learning areas, covering topics such as national security strategy and military and non-military instruments of national power, among many others.[14] The sixth area for each relates to strategic leadership.

There are other demands on teacher time, such as course reviews, adjustments called for by changes in OPMEP guidance, emergent issues such as cyber terrorism, and periodic re-accreditation. The net result is that the teaching faculty's focus is on the classroom. Their research is most often directed back into curriculum materials, meaning little time is left for most teaching faculty to pursue traditional research and publication.[15] Research faculty can support teaching but they need to recognize the differing approaches across the schools and the lead times of the curriculum development process. The outreach needs to be structured so it is seen by the teachers as helping, rather than being intrusive.

The National War College and the College of International Security Affairs (CISA) teach strategic leadership as an integral part of studying the overall strategic environment and solving related problems. The premise is that to lead at strategic levels, students must first be able to understand the strategic challenges they will be asked to address. This teaching supports the sixth learning area from the OPMEP for the War College: strategic leadership in a joint, interagency, intergovenmental, and multi-national context. CISA's counterterrorism program is the newest JPME II senior-level college, and it will be accredited by the peer-reviewed Process of Accreditation for Joint Education process in fall 2013. The College also provides education to Afghanistan-Pakistan Hands[16] at Fort McNair and to officers and senior enlisted special operations forces at Fort Bragg, North Carolina,

The Eisenhower School has a dedicated strategic leadership course. Its purpose is "To develop innovative strategic thinkers and change agents who can create and lead agile, effective operations to attain and maintain competitive advantage in a volatile, uncertain, complex and ambiguous strategic environment."[17] The course was designed based on extensive reviews with outstanding civilian institutions such as the Center for Creative Leadership and other instructional programs in and out of the military, including examinations of how people learn. It covers areas such as foundations, cognitive aspects, and interpersonal elements of strategic leadership, decision-

making in the strategic environment, and leading large organizations.

The iCollege offers a Master of Science degree program in Government Information Leadership and a certificate program in Government Strategic Leadership. Courses focus on leveraging information power and information technology for strategic advantage, as well as collaborating across interagency boundaries, and creating and leading Information Age government organizations.

A notable strength of the iCollege is its second-generation online learning opportunities, providing short blended resident and online course formats to support the continuous learning needs of military and civilian government leaders wherever they are located. A 14-week executive program focuses on strategic leader development in the Information Age and governance in cyberspace. The iCollege's strategic leader courses and other programs align with the goals of the Joint Education Review in many areas, such as point-of-need learning and career-long learning. These have the possibility of forming part of a broader JPME model for strategic-level leadership in the future.

Another important component at NDU is the Center for Applied Strategic Learning, which supports JPME by facilitating experiential learning. The Center provides strategic and operational wargaming and other active learning methods to NDU JPME and other academic institutions. It provides opportunities for JPME students to test their leadership abilities through concepts, plans, and strategies in low-risk, challenging environments to encourage innovative thinking and approaches to complex national security issues.

RESEARCH

At any given time the various research components at NDU are pursuing approximately 180 separate projects over 10 or so broad research areas aligned with priorities set by the Office of the Secretary of Defense, the Joint Staff, and others.

A closer partnership between the research and teaching faculties could be advantageous in many areas, including strategic leadership. In addition to specific publications by NDU researchers, a recent survey found some 29 articles, papers, and talks on strategic leadership from diverse sources that might be of value in the classroom. These, and other directed original research could be tailored to the teachers' needs through technology, collaboration and planning.

Such increased integration would align with several other initiatives at NDU, such as the "One University" concept, the recommendations of the "NDU 2020" Task Force,[18] and NDU's strategic plan. Properly done, it can both increase the effectiveness of the University, and the value to the taxpayer.

Review of Joint Education Review (ROJE)[19]

The Chairman of the Joint Chiefs of Staff issued three white papers during 2012 that pertain to strategic leadership: *Profession of Arms*, *Mission Command*, and *Joint Education*.[20] In the *Joint Education* White Paper, the Chairman expressly desired that joint education fulfill several roles. These included a renewal of the military's commitment to the Profession of Arms with leadership as its foundation; preparing the leaders of Joint Force 2020 (JF 2020) to be adaptive, innovative, critical thinking leaders capable of operating in complex and unstructured environments; and providing the foundation for leaders to be able to understand the security environment, change, and transitions.[21]

In addition to this guidance, the Chairman also directed a review of joint education.[22] The goal was to ensure that outcomes will meet the needs of the strategic environment that is projected for JF 2020. This internal review was conducted by a working group under the MECC and others within the joint education enterprise from August 2012 to March 2013. The review also considered training and education for senior enlisted personnel.

A key part of the review was to define the education tasks needed to support the development of agile and adaptive leaders for the future force. The review began by assessing how effectively joint education is meeting current requirements (i.e. a "known start point"),[23] and then determining a "desired future point" and the current ability of joint education to meet it. The final step was to propose changes that would be needed to achieve the "desired future point." This analysis indicated that, while JPME schools are generally meeting the requirements, more emphasis was needed in five areas (of which all are now being covered to some degree). The areas are: understanding interagency and intergovernmental operations, cultural considerations in the joint planning process, better understanding of the information and economic instruments of national power, clearer appreciation for cyberspace and cyber warfare, and a better ability of leaders at the mid- and senior-levels to write with precision. Researchers at NDU could easily contribute to all of these using their own experiences in relevant areas.

The "desired future point" evolved during the review into six Desired Leader Attributes (DLAs), whose achievement is key to the future of joint education, and whose principals apply directly to strategic leader development. The DLAs call for leaders who can:

- Understand the security environment and the contributions of all instruments of national power
- Anticipate and respond to surprise and uncertainty
- Anticipate and recognize change and lead transitions
- Operate on intent through trust, empowerment, and understanding (Mission Command)
- Make ethical decisions based on shared values of the Profession of Arms
- Think critically and strategically in applying joint war fighting principles and concepts to joint operations.[24]

The analysis then examined joint education programs' current capability to achieve the DLAs.[25] The ROJE's findings and recommendations fall into four major areas: *DLAs/Sub-attributes/Educational Outcomes*; *Joint Education Continua; Lifelong Learning/Advancements in Learning Technologies*; and *Faculty Quality*.[26] Ways that NDU research can contribute to strategic leader development in these areas are described in chapter's final section.

The review noted that, while education is a fundamental pillar of leader development, it is only part of the solution; training and experience also must play a large role if we are to achieve fully the DLAs for the leaders of JF 2020. The ROJE proposes a revised, but not yet approved, OPMEP continuum that incorporates key elements of the review. The continuum includes a particular emphasis on *self-directed*, *career-long learning*, and *development* to build leaders who can meet and overcome the uncertain and complex challenges of an increasingly competitive and dangerous world.[27]

NATO Initiatives in Military Education

The 42nd Conference of NATO Defense College Commandants met in Oslo in May 2013. The theme of the session was *The Role of Education in the Post-Afghanistan Era: Making Smart Defence Smarter*. This conference benefited from a session held at Wilton Park in the United Kingdom two weeks earlier to examine *Connected Forces, Educated Minds: Transformation and Professional Military Education*. Key debates at Oslo[28] covered challenges for innovation, innovation in education, and new approaches to education. Major supporting issues included the role of higher education in mission command, the importance of partnerships in tackling emergency security challenges, and the consequences of the draw-down of Coalition forces in Afghanistan. Knowledge gaps need to be identified as NATO redefines roles and re-

sponsibilities between its strategic commands and works to make Alliance programs more applicable to current challenges. Educational efforts need to be aligned with the core mission, which is to support and enable the joint warfighter. In this context, the commandants emphasized the need to blend education and training, which are considered to include the knowledge skills and competencies needed to meet contemporary and future command challenges, and to link them to exercises. In the process, it is vital that young people be engaged, not just for the armed forces, but also for the educational system overall. The transformation of the armed forces must be linked to the transformation of PME.

As in the U.S., NATO allies are facing declining defense budgets, grappling with technology change, and confronting endemic short-termism and academic parochialism in programming and curricula. This austerity provides opportunities for innovation and examples of innovation in education are emerging across the Alliance. Allied Command Transformation has put nearly all NATO training courses online, much as the U.S. has done with military doctrine. Hungary has radically centralized education across public services with an emphasis place on strong integration in common education and training underpinned by the civilian Bologna process of bachelor and masters qualifications. Denmark is ending nearly all residential PME and placing much more of the responsibility for education on individuals. A key quote was, "If you think education is expensive, try ignorance."[29]

An important question is how to take advantage of this NATO innovation in education and training, especially the emphasis on partnerships, online access and blending, and apply applicable parts to U.S. PME/JPME.

NDU's Advanced Education Research Initiative

The Advanced Education Research Initiative (AERI) at NDU seeks to tap into the explosion of innovation in private sector adult education in ways that can benefit DOD education and training missions and address some of the findings of the ROJE. Components include: open source-open standards software for education (current and on the horizon); instructional design approaches, particularly those that enhance the transfer of knowledge in online and blended environments; best practices in the use of education technology in higher education and training; and education technology innovations (e.g., Massive Open Online Courses [MOOCs], flipped classrooms, virtual worlds, gamification, 3D printing, Internet of Things, etc.). Other features involve the design and collection of analytics from individual student data to coach

and guide their learning toward organizational data that can guide improvements in teaching and learning processes. If requested by appropriate authorities, these could be extended to PME and JPME reviews that build on the ROJE.

The AERI is not directive. It is intended to identify *opportunities* on which the teaching faculty can draw. It will not *dictate* approaches, pedagogies, or curricula.

Through the AERI, NDU faculty and leadership can access new teaching and learning techniques and tools, as well as suggestions on how to use them. This could help make faculty members aware of potentially useful approaches that might match their content needs, teaching styles, and student capabilities. Options range from hands-on demonstrations to raise awareness of what's available, to faculty development workshops, to the creation of a community of interest with access to a teaching and learning portal that can be used across JPME institutions. Other possibilities include panel discussions to highlight new techniques as they start being used, the creation of an NDU faculty development center, awards to recognize users of the new approaches, and a variety of other faculty development opportunities.

The AERI could also help design, implement, and evaluate pilot projects within NDU and across other DOD education/training organizations for the benefit of the larger enterprise. Lessons learned from the pilots could be shared widely and extended to international partners. Such pilots could be tailored to the needs of innovating sharing and teaching within secure DOD networks. Once concepts have been piloted and evaluated as successful, the AERI could help transition the lead for implementation to the teaching faculty.

The AERI also could help develop evaluation templates, processes, and procedures to identify promising tools and assess their strengths and weaknesses. These could lead to understanding staffing and procedures for training and implementation.

Done properly, the AERI could move beyond local implementation to help shape new approaches for teaching and learning that can span silos across organizations—among PME and JPME institutions, with alliance partners, and with the broader adult education community. It also could facilitate strategies to enable career-long learning. The International Transformation (ITX) Chairs Network, which links together U.S., allied, and partner PME and JPME faculty, also may be able to contribute.[30]

Integrating Research Support with Teaching Initiatives

To take advantage of the University's new mission and address the changes pro-

posed by the ROJE, the innovation going on in NATO and the opportunities in the AERI, teaching and research members of the NDU faculty have begun exploring a set of intersecting initiatives. In particular, they are looking at four issues: Addressing the specific findings of the ROJE; supporting teaching, curriculum development, and advanced pedagogy at NDU's educational institutions; creating knowledge to help students learn to operate and think creatively in an unpredictable and complex world; and engaging warfighters and policymakers with research initiatives tied to their priorities. It is important that the teaching faculty see this as an effort by research to support their needs, not an attempt to dictate solutions.

LEVERAGING RESEARCH TO ADDRESS THE SPECIFIC FINDINGS OF THE ROJE

The first area of the ROJE's findings deals with DLAs/Sub-attributes/Educational Outcomes, in particular: "DLA educational outcomes are dynamic and must be regularly reviewed and updated to respond to the changing operational environment via MECC… processes."[31]

As examples of the changing operational (and strategic) environment, the ROJE cites developments such as economic challenges, natural resource constraints, rapidly changing technology, the rise of a new warfare domain in cyberspace, and cross-domain challenges, among others. It also notes the need to respond to domestic threats (including terrorism, natural disasters, etc.) through a whole-of-nation approach, the increasing complexity of modern operations, and the vital need to improve the level of cultural awareness among our military and civilian leaders.

From an NDU perspective, this raises several questions. Is the University preparing today's students to discuss these dynamic issues at strategic levels? How can new learning approaches be integrated into curricula so that students actually can use them to address "wicked," complex problems? Even as we continue teaching the enduring elements of strategy and warfare, how can NDU components work together to help the MECC process adjust quickly enough to ensure our graduates really will "…understand the security environment and the contributions of all instruments of national power," many of which are rapidly evolving?[32]

These questions should be jointly addressed between the teaching and research faculties. For example, the strategic leadership resources of the iCollege and the research centers might be able to supplement college assets to cover the increasing need for education in the cyber and technology areas. Other university resources could help address the ethical issues raised by these changes.

Three other DLA-related findings/recommendations deal with educational tools and methodologies. They are:

- "The proposed subordinate educational outcomes require further refinement to ensure they are both achievable by educational methodologies and assessable."
- "More educational tools are required to achieve DLAs 2 (surprise & uncertainty) and 4 (intent through trust, empowerment, & understanding—mission command)."
- "NDU/Services should conduct further study to evaluate potential educational tools (including on-line learning, gaming, and simulation technologies) that are available to support achieving the DLA educational outcomes, particularly for DLAs 2 and 4."

This is another area where collaborative efforts between the research and teaching components should be coordinated. Educational outcomes can be achieved and assessed better, educational tools identified that might contribute to DLAs 2 and 4, and AERI approaches used to evaluate such tools.

The second broad ROJE area is Joint Education Continua. The ROJE calls for the personnel and PME systems to be more closely aligned, as the NATO commandants did at Oslo. This actually is part of the need for a broader alignment of processes across DOD. The Department has issued more than a dozen strategic, operational, and budgetary guidance documents in 2012 and 2013. Collectively, a key objective is globally integrated operations, supported by cross-domain synergy (the integration of cyber and space capabilities into the land, sea and air domains).[33] The innovation and agility to reach these goals *cannot* be achieved in time for JF 2020 without changes to the cumbersome DOD processes for requirements, programming and budgeting, acquisition, operational planning, and personnel assignment.[34] The challenge is two-fold: First, working with the personnel system to align assignments better with joint education experience, and second, developing leaders who understand the issues. NDU also is exploring ways to make the content of educational programs more available to alumni. Distance Learning elements of the AERI are one example. A recent initiative by the Eisenhower School to connect with alumni stationed at the Pentagon is another innovative case.

Lifelong Learning/Advancements in Learning Technologies is the ROJE's third

area. NDU is tasked to "…conduct a study to explore opportunities to implement elements of lifelong learning in support of Joint Education."[35] Study topics might include current efforts by the military Services to establish career-long learning capabilities, best civilian practices, how to incorporate lifelong learning skills into curricula, and how to leverage advanced education technologies. Online connection "places" might be created for students before they arrive at NDU, while they are here, and after they graduate, that will encourage them to continue to grow as national security experts. Instruction at NDU could be crafted to show students the advantages of being a lifelong learner. Such initiatives also will be part of the AERI, and the Advanced Distributed Learning Initiative[36] may be able to help as well.

The final set of ROJE findings/recommendations deals with Faculty Quality. NDU's research faculty may be able to support teaching faculty development programs better to help "ensure faculty members can educate to the DLAs." Examples might include offering co-publishing opportunities, working with course leaders to understand how research can support their needs, and sharing SMEs to complement faculty expertise on such critical emerging topics as cyber, human resiliency, leader adaptability, and multi-cultural awareness.

POTENTIAL RESEARCH SUPPORT TO OTHER TEACHING, CURRICULUM DEVELOPMENT AND ADVANCE PEDAGOGY AREAS AT NDU

Collaborative steps taken in April-May 2013 suggest how research might link more closely to curriculum development at NDU. One of the core courses at the NWC will include a Western Pacific scenario for an end-of-course exercise in strategy development and implementation. The intent is for NWC students to develop strategies from the perspective of various regional players (China, Japan, Taiwan, South Korea, Vietnam, Philippines, Singapore, etc.). In preparation, students will need assessments summarizing each country's interests, major foreign policy goals, capabilities, regional disputes, etc. NDU research components are developing these documents, for use both as course materials and as background/starting points for further research. In other cases, the research faculty may be able to support research and publications by teaching faculty and students. The AERI also can offer support to course directors and seek ways to enrich student and peer-to-peer engagement. The International Transformation Chairs Network also may be able to contribute, since it has ties to U.S., allied, and partner PME and JPME faculty.

APPLYING KNOWLEDGE CREATED THROUGH NDU RESEARCH FOR STUDENTS, WARFIGHTERS AND NATIONAL SECURITY LEADERS

The NDU mission statement calls for JPME to "…develop leaders that have the ability to operate and think creatively in an unpredictable and complex world." In addition to supporting implementation of the ROJE, NDU offers an unparalleled environment for cross-cutting engagement to promote critical thinking. For example, an NDU research project being done in support of the Afghan drawdown was found to be able to draw on, or contribute to, 22 other projects being done in 18 organizations, from the Office of the Secretary of Defense to the International Security Assistance Force in Afghanistan, to Non-Governmental Organizations, to commercial mission participants. It would be hard to find another venue that could bring so many diverse players together and make them available to students. There are many similar examples.

In addition to supporting teaching faculty and students, researchers in PME and JPME institutions can contribute to warfighters and national security decisionmakers in four broad ways: looking across stovepipes (cross-cutting); developing in-depth expertise and extended experience with problems (continuity); stepping back from in basket pressures to take a longer view of problems (contemplation); and institutionalizing results through curriculum development and teaching (curriculum). These approaches: cross-cutting, continuity, contemplation and curriculum, should be leveraged.

The approaches are being applied in many ways. NDU research initiatives address all ten of the DOD mission areas from the *Defense Strategic Guidance* (and have begun to adjust to the changed priorities of the Strategic Choices and Management Review) as well as six research priorities provided by the Under Secretary of Defense (Policy) office in 2012 and several of the Secretary of Defense's Science and Technology priorities. These, and other types of research, address issues of direct interest to the joint warfighter and also provide "strategic support" to the policy, acquisition, and other communities.

Conclusion

The research elements at NDU can contribute to strategic leader development in many ways. The first step is to open channels which then build closer, mutually respectful, partnerships with the University's components. Diverse ideas are available to help add value to that partnership through the ROJE and various NATO initiatives to shape the content. More opportunities will come available as the NDU 2020 roadmap and the Advanced Education Research Initiative mature. As research from other

chapters in this book highlights, the first focus in leader development needs to be on how to change people's mindsets and organizational cultures rather than on specific curriculum content or educational processes. Opportunities for innovation abound; it is up to us to take advantage of them.

Notes

[1] The continuum is summarized in the figure, "Officer Professional Military Education Continuum," in *Officer Professional Military Education Policy (OPMEP)* CJCSI 1800.01D (Washington, DC: Joint Chiefs of Staff, July 15, 2009, updated September 5, 2012), A-A-A-1, available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf>. It is being updated through the Joint Education Review, discussed below.

[2] See *Army Leader Development Strategy 2013* (Washington, DC: Department of the Army, 2013) available at <www.civiliantraining.army.mil/TRV%20Document%20Library/ALDS%20_FINAL_2013_Record.pdf>; MCWP 6-11, *Leading Marines* (Washington, DC: U.S. Marine Corps, November 27, 2002), available at <www.marines.mil/Portals/59/Publications/MCWP%206-11%20Leading%20Marine.pdf>; Air Force Doctrine Document 1-1, *Leadership and Force Development* (Washington, DC: United States Air Force, February 18, 2006), available at <www.scribd.com/doc/70656796/AFDD-1-1-2006-Leadership-and-Force-Development>; and Christopher D. Hayes, "Developing the Navy's Operational Leaders," *Naval War College Review* 61, no. 3 (Summer 2008), 77-108.

[3] For the official definition of "Joint" see Title 10, Section 668, Subtitle A, Part II, Chapter 38. Contrary to popular belief, it includes participants not just from multiple U.S. military Services, but also other U.S. Government departments and agencies, allies and coalition partners, and non-governmental persons or agencies. However, the definition of "Joint" in Joint Publication 1-02, "DoD Dictionary of Military and Associated Terms" (Washington, DC: Joint Chiefs of Staff, November 8 2010 as amended through 13 April 2013), is more restrictive: "Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate," JP 1.

[4] JPME is defined in *Officer Professional Military Education Policy (OPMEP)*, CJCSI 1800.01D (Washington, DC: Joint Chiefs of Staff, July 15, 2009, updated September 5, 2012), GL-6, as: "A CJCS-approved body of objectives, outcomes, policies, procedures, and standards supporting the educational requirements for joint officer management." The glossary goes on to list three phases of JPME, Phase I, Phase II, and CAPSTONE.

[5] "Vision and Mission" *National Defense University*, undated, available at <www.ndu.edu/info/mission.cfm>. The university's mission statement was revised in 2012.

[6] NDU has five colleges: the National War College (NWC), Dwight D. Eisenhower School for National Security and Resource Strategy (the Eisenhower School), Joint Forces Staff College (JFSC) in Norfolk, College of International Security Affairs (CISA), and iCollege (formerly the Information Resources Management College). NWC and CISA primarily teach strategic leadership in the context of understanding strategic issues and the national security environment. Eisenhower has a dedicated strategic leadership curriculum, and iCollege focuses on preparing leaders to tackle information technology-related challenges at the strategic level. JFSC focuses mainly on operational level education which, while very valuable, is not within the scope of this paper. Although iCollege is not a JPME institution, its contributions to learning in the new strategic environment are very important.

[7] Most of the NDU research faculty resides within, or is affiliated with, the Institute for National

Strategic Studies (INSS), although some applicable areas, such as ethics and wargaming are assigned elsewhere in the University.

[8] The MECC is chaired by the Joint Staff Director, Joint Force Development (DJ7) and serves as an advisory body to the Director, Joint Staff on joint education issues. The MECC principals include the DJ7 (Chairman), Vice Director J7, the presidents, commandants and directors of the Joint and Service universities and colleges; and the heads of any other JPME-accredited institutions. The MECC working group is composed of dean's level/O-6 representatives of the MECC principals.

[9] In its March 2012 Report on the accreditation of NDU, the Middle States Commission on Higher Education noted that, "NDU is uniquely positioned among universities to combine joint professional military education with strategic research on complex security and regional studies. This synthesis of research and teaching enhances educational explorations with informed discussions of national policy and security concerns. *We commend NDU for the development of a strong research component that adds demonstrable value to the status and relevance of the university. The successful development of the research office has legitimated NDU as a distinctive university with the ability to produce knowledge; the research component strengthens its value to the nation.*" An Evaluation Team Representing the Middle States Commission on Higher Education, *Report to the Faculty, Administration, Board of Visitors, Students of National Defense University, Washington, DC, 20319* (Washington, DC: Middle States Commission on Higher Education, March 28, 2012), 4, accessible via the NDU intranet at <http://intranet.ndu.edu/Accreditation/index.cfm>.

[10] The College of International Security Affairs, the youngest of the NDU schools, focuses on counter-terrorism and irregular warfare in preparing its students to address current security concerns. It offers graduate-level education at Fort McNair and at Fort Bragg's Special Warfare Center.

[11] The National War College curriculum focuses on national security strategy. It provides graduate-level education that subject senior military and civilian leaders to the military and interagency dimensions of national security strategy. The War College provides a JPME Phase II program that is tailored to its mission and focus, which is to educate future leaders of the Armed Forces, Department of State, and other civilian agencies for high-level policy and command and staff responsibilities by conducting a senior-level course of study in national security strategy. *Officer Professional Military Education Policy (OPMEP)*, E-F-1.

[12] The Dwight D. Eisenhower School for National Security and Resource Strategy (formerly Industrial College of the Armed Forces—ICAF) studies national security strategy, with emphasis on the operational resource components in a joint, interagency, intergovernmental, and multinational environment. ICAF provides a JPME Phase II program that is tailored to its unique mission and focus. *Officer Professional Military Education Policy (OPMEP)*, E-G-1.

[13] Every six years JPME programs are assessed through a peer-reviewed process known as the Process for Accreditation of Joint Education.

[14] *Officer Professional Military Education Policy (OPMEP)*, Appendices F and G to Enclosure E. The learning areas are: 1) National Security Strategy (National and Eisenhower); 2) The U.S. Domestic Context of National Security Policy and Process (National); National and Joint Planning Systems and Processes (Eisenhower); 3) The Military Instrument in War and Statecraft (National); National Military Strategy (Eisenhower); 4) Non-Military Instruments of National Power and Statecraft in Peace, Crisis, War, and Post-Conflict Environments (National); Joint Warfare, Theater Strategy and Campaigning in a Joint, Interagency, International, and Multilateral Environment (Eisenhower); 5) The Global Geo-Strategic Context (National); Integration of Joint, Interagency, Intergovernmental, and Multinational Capabili-

ties (Eisenhower); 6) Strategic Leadership in a Joint, Interagency, Intergovernmental, and/or Multinational Context (National), and Strategic Leadership (Eisenhower).

[15] Nonetheless, many faculty members do actively engage in outside research and publications. See Michael J. Mazarr and the NDU Strategy Study Group, *Discriminate Power: A Strategy for Sustainable National Security Posture*, The Philadelphia Papers, No. 2 (Philadelphia, PA: Foreign Policy Research Institute, May 2013), available at <www.fpri.org/articles/2013/05/discriminate-power-strategy-sustainable-national-security-posture>; and Cynthia Watson, *Stability, Security, Reconstruction and Transition Operations: A Guide to the Issues* (Santa Barbara, CA: Praeger, April 20, 2012). Both Dr. Mazarr and Dr. Watson are at the NWC.

[16] The AFPAK Hands Program was established in 2009 to create greater continuity, focus and persistent engagement on Afghanistan and Pakistan. This program develops a cadre of military and civilian personnel who speak the local language, are culturally attuned and focus on regional issues. See CJCSI 1630.01, *Afghanistan/Pakistan Hands Program* (Washington, DC: Chairman of the Joint Chiefs, September 3, 2010), available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1630_01.pdf>.

[17] Eisenhower School strategic leadership course layout for Academic Year 2013.

[18] The NDU 2020 Task Force addressed four broad areas (slightly re-ordered here and with more detail than in published paper): 1) Joint Education Excellence, including: Curriculum & Faculty Development, Enhanced Scholarship, and Core & Elective Teaching; 2) Enhanced Student Experience, including Enriched classroom engagement, Mentoring; Collaboration and Innovation, including: Change Behavior to "Learn" Lessons, Broad Engagement, domestic & International, Partnerships, and Alternative Futures; 3) and Stakeholder Support, including: strategic support outside NDU.

[19] Much of this section is taken from *The Review of Joint Education, 2013* (Washington, DC: Joint Chiefs of Staff, June 24, 2013), available at <http://intranet.ndu.edu/aaffairs/jpme.cfm>.

[20] *America's Military: A Profession of Arms: White Paper* (Washington, DC: Department of Defense, available at <www.jcs.mil/content/files/2012-02/022312120752_Americas_Military_POA.pdf>; *Mission Command: White Paper* (Washington, DC: Department of Defense, April 3, 2012), available at <www.jcs.mil/content/files/2012-04/042312114128_CJCS_Mission_Command_White_Paper_2012_a.pdf>; *Joint Education: White Paper* (Washington, DC: Department of Defense, July 16, 2012), available at <www.jcs.mil/content/files/2012-07/071812110954_CJCS_Joint_Education_White_Paper.pdf >.

[21] *Joint Education: White Paper*, 5.

[22] Martin E. Dempsey, Memo, July 16, 2012 to the Military Education Coordination Council

[23] The "known start point" stems from the Goldwater-Nichols Defense Reorganization Act of 1986, with its objective of achieving "jointness," and definitions for joint education, and specifically JPME, from Representative Ike Skelton's 1989 report of the Panel on Military Education. The general consensus of the working group is that JPME is effectively meeting the Skelton Panel's intent for developing joint officers. See Committee on Armed Services, House of Representatives, *Report of the Panel of Military Education*, 100th Congress, 1st Session (Washington, DC: Government Printing Office, April 21, 1989), available at <*www.au.af.mil/au/awc/awcgate/congress/skelton1989/skelton.pdf*>.

[24] The MECC determined a separate and distinct set of DLAs should be developed for the enlisted leaders of JF 2020; that effort is on-going. Enlisted education is not considered in this paper.

[25] The DLAs were treated in the *Joint Education Review* gap analysis as the *de facto standard* for JF 2020 leader competencies.

[26] *The Review of Joint Education, 2013*, 7, 17-18.

[27] Ibid., 16.

[28] Julian Lindley-French, Oslo Conference Summary Draft, May 31, 2013, 3. Held in authors possession.

[29] Derek Bok, quoted in Howard R. Greene and Matthew W. Greene, *Paying for College: The Greene's Guide to Financing Higher Education* (New York: St. Martin's Press, 2004), 203.

[30] "The International Transformation Chairs Network," in *Capability Development in Support of Comprehensive Approaches,* ed. Derrick J. Neal and Linton Wells II (Washington, DC: Center for Technology and National Security Policy, 2011), xi-xii.

[31] *The Review of Joint Education, 2013*, 38.

[32] Ibid., 30.

[33] *Capstone Concept for Joint Operations: Joint Force 2020* (Washington, DC: Joint Chiefs of Staff, September 10, 2012), 4-7; *Joint Operational Access Concept (JOAC)*, Version 1.0 (Washington, DC: Joint Chiefs of Staff, January 17, 2012).

[34] See Richard L. Kugler and Linton Wells II, *Strategic Shift: Appraising Recent Changes in U.S. Defense Plans and Priorities* (Washington, DC: Center for Technology and National Security Policy, April 29, 2013), pre-publication final draft, available at <www.ndu.edu/CTNSP/docUploaded//Kugler-Wells%20 -%20Strategic%20Shift%20-%20PrePub%20Final.pdf>.

[35] *The Review of Joint Education, 2013*, 41.

[36] The ADLI was created by an Executive Order. Executive Order 13111, *Using Technology to Improve Training Opportunities for Federal Government Employees* (Washington, DC: The White House, January 12, 1999), available at <http://archive.opm.gov/pressrel/1999/eo.htm>. It is administered by the Deputy Assistant Secretary of Defense (Readiness) in OSD.

Chapter 10

Prerequisites to Transformative Joint Professional Military Education

Joan Johnson-Freese

Discussion of transforming Joint Professional Military Education (JPME), indeed transforming anything, inherently must first consider transformation from "what" to "what." If, for example, consideration is being given to transforming a corporate balance sheet from one showing loss to one showing profit, the transformative goal is clear. Even when considering how to transform a training program from one that trains a certain number of individuals to successfully complete a task in a given amount of time, to one that trains more individuals in less time, the goal is still relatively clear. Because of the breadth and abstraction of education as a goal, however, inherent goals are less clear. The first question in transforming education therefore becomes: What is the end state that is being sought, and where are you starting from?

In 2010, the House Armed Services Committee issued a report titled, *Another Crossroads? Professional Military Education Twenty Years after the Goldwater Nichols Act and the Skelton Panel.* The report stated that,

> *…the current* [Professional Military Education (PME)] *system should be improved to meet the country's needs of today and tomorrow…. PME, therefore, must remain dynamic. It must respond to present needs and consistently anticipate those of the future. It must continuously evolve in order to imbue service members with the* intellectual agility *to assume expanded roles and to perform new missions in an ever dynamic and increasingly complicated security environment.* [emphasis added][1]

Even if one assumes that the end state being sought in transformative education is the broadening of knowledge and perspectives toward individuals with greater "intellectual agility" at the end of the program, the "from what" "to what" question remains unanswered because the "from what" aspect of the equation can at this point only be ascertained from imprecise data and often varying perspectives. That reality is one of the few that can be said with any great certainty, based on the variety of perspectives offered on where JPME currently stands in recent literature, and the lack of independently gathered data based on relevant questions.

Having written on JPME first in online articles, then in a 2012 *Orbis* article, followed by additional online articles, and then a book in 2013, and consequent speaking and media appearances, I have outlined these issues in multiple venues and with both elaboration and increasing gradation over the past three years.[2] These elaborations and gradations are the result of feedback received from multiple JPME faculty and students, past and present, from a variety of institutions. While this anecdotal evidence is no substitute for independently gathered hard data—the first recommendation in my book[3]—it does provide the basis of a strawman proposal for discussion on prerequisites for transformational education.

In discussing these issues, this chapter will outline the primary difference between education and training and how it affects thinking about JPME. This difference will be analyzed in four areas: academic freedom, quality faculty, relevant curriculum, and institutional credibility. The chapter concludes that without changes in at least these four areas, transformational change is unlikely.

Education versus Training

The first prerequisite for moving towards transformational education is a recognition and acknowledgement that there is a difference between education and training, and then to move from a proclivity toward training to a preponderance of education. Admittedly, training is inherently part of JPME, especially in areas dealing with joint military operations. But JPME goes beyond training by adding an understanding of *context*, so that training can be optimally employed. Equally if not more important is the pedagogical differences in training and education. The success of training programs can be easily measured because right and wrong methods and answers are being taught. Education, however, is more nebulous and difficult to measure as it focuses on how to think, not what to think, requires time for study and contemplation, and often does not have a right or wrong answer. It is

within the educational portion of JPME, however, that the opportunities for transformative results lay.

There is, however, considerable evidence that the comfort zone of the military is within technically oriented areas,[4] with right and wrong answers. Hence it is here that the most difficult issue regarding the potential for transformative education begins: culture. JPME brings together two professional cultures that are not intrinsically compatible or complimentary: the military and academia. Academia often inherently rejects the notion of right and wrong answers, and effectiveness measured by metrics. Both, however, are professions, and so have a strong ethos. To disregard that fact is to create a situation where culture-related issues are ignored or dismissed, thereby creating professional resentments that can have a deep chilling effect on potential JPME effectiveness toward intellectual agility. The area where this becomes evident first and foremost is that of academic freedom.

ACADEMIC FREEDOM

Academic freedom for both students and faculty is neither boundless nor does it come without professional responsibility. The American Association of University Professors, *1940 Statement of Principles on Academic Freedom and Tenure* offers guidelines in both areas.[5] What academic freedom means in practice is that alternative views, even on government policy, can and *should* be considered in the classroom to challenge what students know and what they think they know—which can be considerable, and entrenched—and in faculty research and publications to allow them to be active professionals. Academic freedom is the basic difference between teaching what to think and teaching how to think. It is also a key prerequisite for attracting and keeping quality faculty.

QUALITY FACULTY

While there has been, and continues to be, considerable attention on innovative educational delivery methods, such as comparing resident, seminar-based methods to distance education methods, others believe the focus should be elsewhere. Bill Gates succinctly prioritizes the needs for educational success by stating that, "Technology is just a tool. In terms of getting the students working together and motivating them, the teacher is the most important."[6] Quality faculty are those who are active professionals in specific fields of study and therefore knowledgeable about, and able to include, relevant transformative challenges in the curriculum

and the classroom. While being a strong researcher does not guarantee that one is a good teacher, it certainly is the only way to assure that one's knowledge goes beyond a prepared set of PowerPoint slides, and that the curriculum is current. Unfortunately, too often the default definition of "quality faculty" at JPME institutions is anyone with a doctorate or anyone with military or practitioner experience. The difference between those definitions—professional activism—goes to the heart of whether faculty consider themselves "professionals" or whether teaching is an occupation, or job. It is interesting to note too that it was military sociologist Charles C. Moskos who first differentiated between these professional models types.[7] When these models are applied to military education, faculty members who consider themselves professionals require academic freedom to maintain professional credibility. When teaching is merely a job to be accomplished in an 8-hour day in the office, academic freedom becomes expendable.

Having the professional background and currency to challenge the students is only part of the faculty requirement for transformational education though. Faculty must also have the institutional job security to be able to challenge the students without fear of losing their jobs if the students do not "like" being challenged or "like" being presented with views contrary to their own. A key part of a teacher's job is to sometimes make students uncomfortable; to challenge them. But they will be unwilling to do that if students have an inordinate say in their job security, fear of which, based on feedback I have received,[8] seems too often the case. This means that JPME must consider a tenure or a tenure-like system.

Some PME institutions already have a tenure system: the U.S. Naval Academy at Annapolis and the Naval Postgraduate School at Monterey, California, for example. Other institutions have at times offered faculty tenure and then stopped doing so. In some cases, when faculty are hired at an institution under one set of employment rules only to have them changed in a seemingly arbitrary manner, it creates an unsettling professional "tenuousness." Without professional security, quality faculty are not going to opt for positions in PME institutions, even when their professional merit is deemed strong by the institution. Moreover, the stronger their merit and credentials, the greater the likelihood faculty will have options to go elsewhere, which do provide them with security. The inconsistency of the tenure policy across PME institutions seems curious since all institutions are part of the Department of Defense educational continuum, under the Secretary of Defense and the Joint Staff.

Additionally, a strong military faculty presence is important, as these individuals are current in operational fields, which is a key requirement in JPME institutions. So too is faculty diversity. Such diversity ensures the faculty is varied across disciplines and demographics, which helps to socialize personnel towards the current and future operating environment. In an increasingly joint, allied, and interagency environment, military personnel must be comfortable working across Service lines, as well as with non-governmental institutions and individuals. That means they must be exposed to different ways of thinking and perspectives, and different kinds of people.

Based on my own 8-year experience as a department chair, this is often difficult because of a perceived anti-intellectual, hostile work environment for civilian academics and minorities. When women and minorities interview at JPME institutions, it quickly becomes obvious that the majority of faculty members are older, white men. Age is a function of both many being already retired from a military career, and because young academics can find acceptance in the classroom by senior military officers to be difficult, so there is a tendency to hire "more mature" faculty. The perception of anti-intellectualism stems from attitudes. Retired Army Colonel Ralph Peters' venomous tone toward civilian academics in a 2007 article illustrates where that perception might stem from.

> *Perhaps the most perverted romance of recent decades (Lord knows, that quite a low standard) is the love affair between the military and civilian academics. I challenge any reader to cite a single example of a social science professor's work contributing to any military victory....You should never let any full-time university professor near any form of practical responsibility, and you should never let a rising officer near a professor.*[9]

Though most individuals are not as blatant as Peters, the attitude he expresses is not considered an anomaly, nor outdated by at least some civilian faculty members.

The demographics of JPME faculty is perhaps most easily explained by an expression I learned from my students: "Ducks pick ducks." They used it in conjunction with promotion boards, but the general premise that people hire people like them, and who think like them, holds true in JPME. Since there are few experienced, civilian academics in JPME administration—more often administrators are retired military practitioners, with or without a doctorate—they are rarely the ducks doing the hiring.

RELEVANT CURRICULUM

A quality faculty will be able to develop and execute a quality, relevant curriculum, based on their own professional knowledge and with their finger on the pulse of stakeholders' needs. It is essential that they be allowed to do so. Curriculum dictated externally too easily becomes subject to "flavor of the day" insertions, training models, and being driven by artificially generated "competencies" that in turn generate metrics. These issues are most troublesome when military staffs in Washington exert control over the curriculum—a shorter, educational equivalent of the often referred to 7,000 mile screwdriver used by former Defense Secretary Donald Rumsfeld to run operations in Iraq.[10] A solid curriculum should have internal coherence, and, while currency is desirable, so too are foundational elements that take a course beyond a review of current events or it being at a "informational" level. Naval War College Professor Mackubin Owens stated in 2006, that,

> *The new mantra has become 'teaching to competencies,' which suggests the purpose of military education—to broaden the intellectual horizons of officers to encompass larger strategic and operational issues that will confront them in the future—has been abandoned for mere training.*[11]

Substituting "synergy" for internal curricular coherence is equally damaging. Synergy is currently a favorite buzzword within bureaucracies and is increasingly being forcibly interjected into PME.

I would argue that the less the curriculum of JPME institutions is dictated externally, the more relevant and coherent the curriculum will be. Some PME institutions currently have a very relevant curriculum given the student body it serves; the problem is the students may not recognize that fact. This "relevance" issue gets to the heart of the "why PME at all" question; Goldwater-Nichols mandates PME. While the subject matter is broad, it includes a considerable amount of material not offered at civilian academic institutions and is presented differently. Curriculum at JPME institutions includes military operations—a course unlikely to be offered at civilian liberal arts institutions—and is taught with a practitioner bent. Graduate programs at civilian institutions are largely targeted at educating those who will expand and teach in the field, thereby including a significant theory component. JPME programs include theory, but less so and towards a different end. Military officers must be able to speak the same language as their civilian academic counterparts, or be left out of conversations, and so it is important for them to know the vocabulary and have a working

knowledge of relevant theoretical concepts. Further, at JPME institutions, students interact with individuals in other branches of the military, and civilian security practitioners. That is critically important for future joint and interagency operations. It does, however, largely omit the perspective of those beyond the security community.

But perhaps that mandated material is not needed, and military officers and the country would be better served by attendance at civilian institutions where diversity of perspectives is assured. Suzanne Neilson, a faculty member at the U.S. Military Academy, raised that issue in her recent review of *Educating America's Military*.[12] I would suggest that while exposure to a diversity of perspectives is essential, that exposure becomes the responsibility of the faculty because the curricular material and opportunities to interact with other security practitioners at PME institutions (most often) overrides other considerations. While there will be a small percentage of military officers who can and should attend programs at Harvard, Princeton, and other similar elite programs, the tailored programs at JPME institutions (can) offer military students more than most non-security focused programs at civilian institutions.

Breadth of knowledge is certainly desired beyond the technical fields with which most officers are familiar and comfortable. Further, the student body is diverse— including doctors, lawyers, logisticians, acquisition specialists, pilots, ship drivers, etc.—and so one curriculum cannot possibly be fully relevant to all of them. But the one thing they all have in common is that they all work in the security field, and therefore it behooves them to be well-versed in subject matter related to the security field, broadly defined to include such areas as religion, anthropology, geography and economics, rather than in French literature, poetry, accounting, and the like. The real challenge is convincing the students, and subsequently administrators who seek to keep the students "happy," that the curriculum need not be relevant to every student's next assignment. Rather, JMPE education should focus on "the rest of their career."

INSTITUTIONAL CREDIBILITY

Quite simply, education where success (as measured by graduation rates) is assured cannot be challenging, and success is virtually guaranteed at JPME institutions. As the students themselves say about PME programs: "It's hard to get an A; it's even harder to get a C."[13] Declaring educational success under those circumstances dilutes the value of the program and the degrees conferred. In my 2013 book I explain the problem as follows:

> *Consider as you read: How would you feel as a parent if you son or daugh-*
> *ter asked you to pay somewhere between $57,000 and $166,000 (the range*
> *of "cost per student" at the War Colleges) for him or her to attend a grad-*
> *uate program where there are no academic admission standards and ev-*
> *eryone graduates in 10 months? (Unless the War Colleges are the military*
> *equivalent of Lake Wobegone where all the children are above average,*
> *statistically, everyone graduating from an accelerated, rigorous graduate*
> *program where they are no admission standards is highly unlikely.) Fur-*
> *ther, the program will constantly pulse your child to make sure he or she is*
> *"happy" with what they are being taught, by a faculty some of whom have*
> *neither teaching experience nor subject matter expertise. You might have*
> *qualms about the educational value of the program.*[14]

As long as student success is guaranteed, the educational credibility of JPME insti-
tutions and programs will remain questionable. A first step toward fixing the issue
would be the bifurcation of PME programs where both PME credit and academic
degrees are awarded. Allow students to choose the degree program as an option, and
award grades and consequently degrees based upon more rigorous graduate-level
standards, while no jeopardizing their careers if those standards are not met.

Further, the academic profession, like the military profession, is rank based.
There are expected professional milestones to be met and accomplishments achieved
before one rises in rank in both professions. To ignore the academic milestones and
award academic rank based on non-academic criteria at JPME institutions both be-
littles the ethos of the academic professional and leaves the institution vulnerable
to credibility issues. JPME institutions must have credible academic rank systems
comparable, though not necessarily strictly mirroring, civilian academic institutions.
While some institutions have a rank policy in place, not all do, and adherence to the
policy varies. Further, consideration should be given to using titles such as Military
Professor and Professor of Practice to differentiate between those who have earned
their respective titles in different ways.

Finally, civilian academics experienced at and appreciative of the value of ed-
ucation, and what academics do as part of their profession, should be included in
the (large and ever expanding) mix of JPME administrators. For example, someone
who has served on, or headed, a tenure or hiring committee knows how they are
run, how to minimize problems, and expectations of quality faculty. Their inclusion

will not eliminate problems, but can alleviate many that then consequently result in both credibility and hiring and retention issues. This very simply says that just as doctors are part of the administrative mix of hospitals, and pilots in pilot training, so to should professional educators be included in educational administration as a rule, not the exception as it is today.

What Will It Take To Make This Happen?

The hardest aspect of any organization to change is culture. But it is precisely a culture change that is required in PME to move from marginal changes to transformative change. Acknowledgement of differences is a necessary but insufficient first step toward increased mutual respect for and between the two professions—military and academia—which are kludged together in JPME. Denial of differences and the tensions those differences can and do create serves only to paper over problems toward an "everything is fine" picture, rather than actually identifying and utilizing the strengths of each culture.

Because organizations rarely change their culture without impetus, broad top-down guidance is required, supporting "intellectual agility"—vice training—as the JPME goal. Follow-through is then needed to assure rhetoric and actions match implementation. Goals should focus on the four issues outlined in this chapter: academic freedom, measures to hire and retain a quality faculty, a coherent curriculum, and institutional credibility. Additionally, there must be a proactive effort made to assure a blend of backgrounds, including career academics, among administrators and decision makers who will consider educational goals as well as stakeholder interests within the Chairman of the Joint Chiefs of Staff Joint Force Development (J-7) section, the Military Education Coordinating Council (MECC), and the various JPME institutions. This is not currently the case and is the single biggest factor blocking transformational change.

Conclusion

In the increasingly complex era of globalization, radicalism, fiscal austerity, and simultaneous global fragmentation and interdependency, preparing American military officers to understand the context of their operations is more important than ever. JPME is the venue where that understanding and context can be taught. It is far too important to be seen as low hanging fruit, ripe for the budget ax. Therefore, those of us involved in that enterprise owe it to these officers, and the nation, to not be swayed by the comfort of the status quo, but to truly

move toward transformative education that develops "intellectual agility" for our service members.

Culture changes are the hardest changes to make and are rarely if ever instituted from within, at least not in non-crisis periods. JPME is not in crisis. It is doing a good job of training and raising the level of education for a vast number of military officers. It can, however, do better. Change in four areas have been suggested in this chapter. They are areas necessary, but not sufficient, for transformational change to occur. They are a place to start.

Notes

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[3] Johnson-Freese, *Educating America's Military*, 17.

[4] *Another Crossroads*, Preface and Executive Summary.

[5] The *American Association of University Professors and the Association of American Colleges 1940 Statement of Principles on Academic Freedom and Tenure with 1970 Interpretive Comments*, available at <www.aaup.org/file/principles-academic-freedom-tenure.pdf>.

[6] Kevin Ryan and James M. Cooper, *Those Who Can, Teach*, 12th Edition (Boston: Wadsworth Centage Learning, 2010), 220.

[7] Charles C. Moskos, Jr. "From Institutions to Occupation: Trends in Military Organization," *Armed Forces & Society* 4, no. 1 (October 1977), 41-50.

[8] At an April 18, 2012 panel on Professional Military Education, Major General Robert Scales challenged the premise that faculty feared for their jobs and asked an Army War College faculty member in the audience to confirm that they did not. The faculty member confirmed just the opposite, that faculty

often did fear for their jobs. "The Future of Professional Military Education," Conference Seminar, *Foreign Policy Research Institute*, April 18, 2012, available at <www.fpri.org/multimedia/2012/04/future-professional-military-education-audio>.

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[11] Mackubin Thomas Owens, "Lessons Learned," *National Review Online*, August 7, 2006, available at <www.freerepublic.com/focus/f-news/1688237/posts>.

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Chapter 11

Building Creative Military Leaders: Challenges to Overcome

Theodore C. Hailes

The reality for military leaders over the millennium has been in dealing with change, imperfect knowledge, fluid dynamics, and conflicting interests. Leading into the future, breadth and depth of knowledge will be improving dramatically, but change will accelerate exponentially, the fluidity of a situation increased and interests magnified. These are both the intended and unintended effects of a globalized world. The leaders of the future must be more creative, embrace innovation, and relish the unpredictability of the threats faced. The way the U.S. Department of Defense (DOD) currently trains and educates its future leaders through Professional Military Education (PME) is not keeping pace with the reality of the rapidly changing nature of technology, the introduction of vastly different threats, and the constant versus episodic nature of conflict.

The entire national security system of the United States is out of date. Born out of World War II, it was created for a world that no longer exists. Moreover, the very nature of military organization is at issue. Despite the Goldwater–Nichols Act of 1986, DOD has not fundamentally changed in nearly a quarter century. It has not changed to deal with how international terrorism became a threat, and that the U.S. undertook a massive, decade-long interventions in the Middle East and South West Asia as a means of countering it. It has not changed to deal with how the World Wide Web transformed a fledgling Internet into a revolutionary tool of global communications, and that smart phones would further enhance its power. It has not changed to deal with the ubiquitous precision that has become available to billions of people with Google Earth and GPS. Nor has it changed to deal with the Euro and the rise of China.

The organizational structure and decisionmaking practices DOD now uses may well be part of the problem, not the solution, in the current circumstances. It most certainly will be in a future world of nearly instant global communications. In response to many of the issues highlighted above, the Chairman of the Joint Chiefs of

Staff, General Martin E. Dempsey, U.S.A. has issued a *White Paper on Joint Education* that stipulates that the "lessons of the last decade of war, and on the future it is clear that joint education is essential to the development of our military capabilities."[1] Over 10 years of war in Iraq, Afghanistan, and elsewhere has proven that military personnel were not well versed enough in a variety of topics, and could not adapt to the circumstances of their environment. The Chairmen provides a prescription for accomplishing the goal of adaptive leadership when he states that joint education objectives and institutions must be reviewed, "to ensure that we are developing agile and adaptive leaders with the requisite values, strategic vision, and critical thinking skills necessary to keep pace with the changing strategic environment."[2] Doing this will hopefully avoid the mistakes of the past, and prepare for an uncertain future.

Change, however, is a difficult process. The first temptation is often to reject such wholesale change and maintain the comfortable and time honored approaches to professional military education. There is value in that approach but great danger as well. The second temptation is to drive for entirely new approaches that capture the latest themes for effective learning and reach for new technologies that can supplant the older approaches to education. There is value here as well, so the challenge is to find the synergies between the old and new, to recognize that history has a role along with advancing technology, and that the accelerating changes to the political, economic, and military structures around the world will demand reform and change in our educational system.

This chapter then takes on that task. It will explore what has changed, what will continue to change and how must the PME process alter to stay relevant. This chapter will outline two separate forces driving change externally and internally within the DOD. The external forces are driven by technological changes, the strategic landscape, and the changing nature of war. The Internal forces are being driven by tradition, doctrine, bureaucracy, and the faculties of PMEs.

External Forces Driving Change

It is necessary to capture external forces that necessitate changes to DOD educational processes when assessing steps required to keep PME vibrant and relevant. Change will not occur until the threat necessitating the changes are made clear and accepted, the alternate paths debated, and direction from DOD provides the incentive and flexibility to act. To catalogue the exterior forces requiring a change to the PME system, they will be broken into three components:

First, the *technological* component that is revolutionizing communications across the world at an accelerating rate with impacts across the entire spectrum of military, political, economic, and cultural arenas. Second, the continuously evolving and rapidly changing *strategic landscape* that presents vastly different threats to the United States, its interests, and allies. Finally, the changing nature of warfare, which is moving from episodic warfare to continuous competition and conflict.

TECHNOLOGICAL

The revolution occurring in the science and technology (S&T) arena is the fundamental spur for accelerating change and lies at the foundation of what will make the future different politically, economically, and militarily. Understanding the breadth, depth, and direction of these changes is basic to determining how our educational system must be altered to stay relevant. The technology story itself is rather simple. However, the ramifications from that story are very complex and open to a wide level of interpretations.

This story begins with what appears to be a rather obvious observation that the rate of scientific progress is accelerating and in many critical fields, such as biology, nanotechnology, and computer science is accelerating at an exponential rate. Where the computer world is seeing a doubling of speed roughly every eighteen months—Moore's Law—, the synthetic biology arena is expanding at an even greater rate. Ray Kurzweil's seminal work, *The Singularity is Near*,[3] and more recently in *Abundance* by Peter Diamond and Steven Kotler,[4] not only provide factual evidence of this acceleration of technology, but go on to speculate on the ramifications of this change and its impact on the whole of society. It is in these changes that we find part of the reason for rethinking our educational structure.

While each branch of S&T, such as nano- or bio-research, are seeing revolutionary changes, the synergy created when these fields interact and reinforce each other raise the rate of change and create this exponential value. In fact, in some cases, even when plotted on logarithmic graphs, some technologies still displayed exponential curves. Thus, the increasing rate of technological growth in turns feeds an ever increasing rate of additional growth, making continued change inevitable. This problem will continue to grow worse with time creating serious planning challenges. In the 19th century, linear strategic thinking would have resulted in very small planning errors, as the world was changing very slowly. Today, this same method of thinking generates vast errors, as the world will develop more knowledge at an ever increas-

ing rate, making predictability into the future far more difficult. The infusion of new technologies reduces the time to react and drastically impacts the ability to predict the future and neither of these traits is helpful to the preparation and execution of military strategies.

The luxury of being able to see twenty years into the future and prepare politically, economically, and militarily is no longer possible. Even a five years horizon is becoming a challenge. Drawing the line between cause and effect of accelerating technology is straightforward: As new systems move from science, to engineering, to production, and then distribution at an increasing rate, six trends will emerge. First, systems are becoming smaller, better, and cheaper (think cell phones). Second, as systems become cheaper, then they will become available to more people worldwide (think globalization). Third, globalization will empower more people, groups of people, and nations (think Internet). Fourth, capabilities that was once the province of only the most powerful nations becomes available to all (think Google Earth, GPS). Fifth, this will mean that power is moving from nations, to groups, and then to individuals with evil intent (think al–Qaeda). Finally, that means there will be a very rapid increase in the number of existential threats as groups and individuals enter the fray.

These trends are having a profound effect in shaping the global threat arena. As technology increases at exponential speeds, the cost of new systems or weapons decreases dramatically. Today, for approximately $70, one can purchase a hard drive capable of accessing and storing 1 terabyte of data. Further, modern computers have access on the Internet to imagery that only 10 years ago was accessible only to the most advanced nation-states. Capabilities that used to reside only in the hands of the world's superpowers are becoming much cheaper and are now accessible by individuals with a credit card and a laptop computer. What this means is that conflicts of a systemic revolutionary nature such as World War I and II remain low probability events, while terrorist attacks, which were typically nuisance level issues, have become greater threats to security globally. Worse, these threats will become progressively more dangerous into the future. We are entering an era where empowered individuals can, with high probability, produce events of high consequence to the United States. This fundamentally changes future warfare in ways that are difficult for most to comprehend. The threat environment has historically focused on state-based threats, and our military systems and education have been skewed in that direction. The introduction of groups and individuals that can possess such destructive power falls well outside the norm of knowledge on war and warfare.

Up through the mid-1980s, the United States could take comfort in being the leading nation in the technology field, and that the U.S. Government, as the principle funder for such technology, felt a degree of control over the process worldwide. Such is not the case today. The challenge facing the U.S. in the future is its rapidly decreasing share of the global research and development pie. After World War II, the Department of War controlled nearly half of global scientific research, today much of global research is conducted outside U.S. borders. The U.S. share of global research and development is declining, and declining fast. Even within the U.S., the federal government is becoming a minor player in technology funding especially in the areas of cyber and biology. Fundamentally, this means that the DOD is no longer the main driver of new technologies, and that as we move toward the future, our resources will only be sufficient to re-direct or tailor for military purposes technology breakthroughs being accomplished either overseas or by domestic civilian industry. The bottom line is that the U.S. Government has little say over what is developed, who gets it, or how it will be employed. All these changes in technology are having a profound impact on the strategic landscape that is presenting vastly different threats to the United States.

STRATEGIC LANDSCAPE

Human evolution presents a puzzle. No one thing seems to explain humanity's sudden takeoff in the last 45,000 years. Part of the answer does seem to lie in an idea borrowed from economics, "collective intelligence." This represents the amount of interaction between individuals that determines a population's inventiveness and rate of cultural change. This story of human evolution comes from Matt Ridley, who wrote in *The Wall Street Journal* and published a book in 2010 titled *The Rational Optimist*.[5] Ridley argues that it was our adoption of early technologies, such as tool making, culture, language, and collective agriculture that allowed our species to move from being cave dwellers toward living together in small villages or enclaves. As this occurred, humanity was able to build off of advancements by others, that we became collectively intelligent with each invention synergistically being formulated based on those contributions. As communications improved, and later as the Internet was conceived, information changed hands more readily and with increasing speed, allowing for still faster development of this collective intelligence further fostering the spread of technology. We are what we are today based on this collective action. Innovation then is directly related to the degree of information sharing and the faster it spreads the greater the innovation. We are seeing the results of this theory today on the strategic landscape.

The consequence of this collective intelligence is power spreading and devolving from the nation-state level to smaller actors greatly complicating our ability to define and prepare for future challenges and transforms the strategic calculus from a "simple" bilateral or multilateral problem to a chaotic challenge. In 1980, membership in the United Nations stood at 154 states. These were the major actors in the world, and only a few of those were considered a threat. Today, membership stands at 192. As we have seen in recent years however, groups are now becoming major actors on the world stage and while many form the very positive backbone of a civil society, more than a few become implacable enemies to the U.S. The social science literature estimates the number of these groups today (in 2011) at somewhere between 30,000 and 60,000.[6] Since they are so amorphous, it is hard to define how many represent a threat to the U.S., but indications over the past two decades indicates that there are many.

We are literally entering into an "Age of Surprise." Our nation is moving into a world we did not fully expect, doing things we did not plan to do, and partnering with nations who used to be our enemies. By 2035, individuals will have access to technologies and weapons that could pose existential threats to nation-states. Often called super empowered individuals, their numbers will be difficult to access and harder to find or dissuade from lethal attacks. When combined with the fact that there will be between 8 and 9 billion people on Earth in 2035,[7] this will provide a breeding ground to test the most sophisticated algorithms to isolate these groups and individuals. Furthermore, machine technology will have reached a point where robots or unmanned vehicles will be autonomous actors as well. In the past 30 years, there was a two to three order of magnitude change in the number of actors that can pose threats on the world stage. In the next 30 years, an additional change of five orders of magnitude is likely. While today we speak of a hybrid threat posed by non-state actors,[8] in the future this threat will be vastly more complicated and will create a highly complex deterrence challenge. The continued exponential technological growth is also dramatically altering the threat landscape, both in terms of such low tech weapons as Improvised Explosive Devices in insurgent operations to new anti-access, area denial (A2AD) weaponry; and far more starkly, in an newly designed fourth generation nuclear and biological weapons arena. The world is truly chaotic.

As a result of all those conditions a few questions need to be asked: Is the DOD adequately preparing our force for this dynamic future? The immediate answer is "No." Technology, however, may have sufficient answers in the future to at least hold this threat at manageable levels. For this reason, its educational system must change

to prepare its force for this highly chaotic world, and not to react to this chaos, but rather to anticipate it. It must look ahead and embrace adaptive leadership roles in the new and different types of warfare that will exist in the mid-2030s.

RESULTING CHANGING CHARACTER OF WARFARE

The rate of change and the infusion of entirely new threats have, in fact, changed the very character of warfare in the 21st century. Here are but a few examples that hint at but do little justice in defining future weapons:

- Synthetic biology will not only be able to enhance human capabilities, but can present a new class of weapons that, taken to the extreme, can annihilate the human species.[9]
- Nanotechnology will be introducing a class of weapons that exist in the microscopic world, while enhancing strength, power, and effectiveness of almost every other class of weapon.
- Cyber will dominate conflict and make the very recognition of what war is, when it started or who was the aggressor, problematic.

This paper, for brevity, will only address synthetic biology since it is the least understood, yet holds, simultaneously, the greatest hope and danger for the future. As a clear example of the speed and importance of research in biology, the human genome project—designed to define the very building blocks of the human body, was officially started in 1990 with an expectation that its work would take fifteen years. In fact, this effort was completed in 2003, two years ahead of schedule. Today, from a swab of your cheek, or a blood sample, your entire genetic sequence can be read. The cost can range from as little as $100, to perhaps $2,000. The result would be a rather large tome, as the sequence would contain more than 3 billion base pairs in a string of As, Cs, Gs, and Ts.[10]

This great scientific feat was made possible through the synergy of computation power, rapidly evolving technology, innovative biological concepts, and an entrepreneurial spirit. The next massive study with even far more reaching consequences is the human proteome project begun in 2010. Its goal is to look at and characterize all 21,000 genes in the known human genome that generate the thousands of proteins that make each of us who and what it is we are.[11] Once the human genetic code will be complete, the pharmaceutical companies will be able to use this data to begin to de-

velop cures for many, if not all, genetic diseases. Diseases like cystic fibrosis, muscular dystrophy, and cancer, may be wiped out. Already today, some cancers, particularly those of the blood, like leukemia, are being attacked by nano-engineered medicines like Gleevec and Sprycell which are able to bind with the leukemic blood molecules at a sub-molecular level, and keep these molecules from reproducing. More such cures and treatments will follow in the years ahead.

However, this technology cuts both ways. Once the human genetic code is understood well enough to cure a genetic disease, it will also be understood well enough to engineer an illness for which no immunity can be found within the human genetic code. Such a disease could, in theory, be 100 percent lethal and could wipe out the human race. This technology can lead into a more pervasive area such as intelligence augmentation of humans, and on the converse side, allow weapons specific to an individual be developed and employed. Such capabilities, we are told by the leading scientists in our national laboratory system, will be resident in the hands of a well-trained microbiologist defined as a master's degree holder from a major university in the year 2025. Such an individual, with a lab costing as little as $100,000, would be able to engineer such a pathogen inside a one-car garage. This truly sounds melodramatic and many forces can be at work over the years that can negate or certainly limit this threat. However, it does fall well within the realm of the possible and can only be denied through a clear understanding of the potential threat and plans set in place, in advance, to eliminate or at least mitigate the danger. Little of these kinds of threats are even mentioned much less studied in courses preparing our officers for the future, yet these bio systems are game changers of the highest order.

There are at least two ways to address this. One is to never let it occur. This may be accomplished through multiple channels to include protocols, laws, and regulations, and a very sophisticated intelligence system. The other is to use the same technologies that enable the development of such a pathogen or human alteration to be able to: a) rapidly detect something novel or new; b) decode its genetic structure; c) rapidly prototype a vaccine or defense for this new weapon; d) and if a pathogen, rapidly produce the vaccine. This would further require distribution on a nation-wide or even global scale, all in 72-96 hours vice the very lengthy process it took for H1N1.

The world described here in the near future will then be substantially different than what we face today, and in certain aspects the very nature of what warfare will look like will change as well. So the imperative remains, all these threats can be ad-

dressed but only if the contemporary methods of preparation are agile enough to envision this world and start to assess how to mitigate the dangers.

The external forces at play, technology, the strategic landscape, and changing nature of war, all necessitate new approaches to prepare the force for the dramatically changing threat environment. The key elements to focus upon are the speed of change, the rapidly expanding threat base, and the lethality of the systems in the hands of nations, groups and individuals. The U.S. military has had the luxury of being able to define the threat, have time to build a force to counter the threat, and time to evolve at least a basic strategic approach to the challenge. In the 20th century we had years to see the threat of the axis powers evolve and have in place plans if not all the hardware to fight that war. The slow evolution of the Cold War allowed for years of preparation, years to conceive, design and field new systems for ground, sea, and air battles.

Even today, twenty years is not an exaggeration for the time required to bring a new major system to the field and while that was sufficient in the past, is totally insufficient in the world we are moving into. And that effort was all focused on a known and predictable enemy. That luxury no longer exists. The speed to field of systems to be effective in the future will need to be brought to bear in months not years. The threat will not emanate solely from nation–states that provide a degree of predictability, but from the amalgam of proliferating groups and individuals that can all present an existential threat to the U.S., and can emerge with little to no notice undercutting the predictability that has allowed for an extended response. Finally, with the new classes of weapons that alter the character of warfare, we face a series of potent threats that will require careful study, innovative approaches to meet and defeat these threats, and recognize the speed of change, the exponential change of weapons fielded, and the challenges our forces will face in that future. While the S&T community is working to stay abreast of the changes, so must our educational system struggle to keep relevant, properly preparing the minds of our future leaders.

Internal Forces Preventing Change

While the previous section dealt with the external forces that drive changes in the PME process, this part will focus on the internal forces that create friction slowing or preventing the necessary changes to keep the academic program relevant. To properly understand what must be done, it is important to first detail the end goal of PME at the officer level and that guidance is provided in the Chairman's *White Paper*

on Joint Education. In brief it states that the military relies "on education in times of uncertainty to develop understanding of the future security environment, lead adaptation and ensure readiness to face future, unknown challenges."[12] The paper further stipulates that PME must ensure:

- The ability to understand the security environment and the contributions of all elements of national power
- The ability to deal with surprise and uncertainty
- The ability to anticipate and recognize change and lead transitions, and
- The ability to operate on intent through trust, empowerment, and understanding.

With the guidance above, this part will detail the forces at work within the military PME structure that inhibit the necessary changes to education thereby missing its target in the preparation of officers. This has always been a sensitive area since in must draw in personalities, policies and approaches that, often with the best of motivations, act more as a distraction at best and debilitating at worst. Most parties involved genuinely desire a productive educational system. But such critical assessments are needed. The facets of the problem, where time and effort need to be spent if the vision in the white paper is to be achieved, are many. Chief among them are: *Tradition*, *Doctrine*, *Bureaucracy*, and *Faculty*.

TRADITION

There is an old bromide that the military has 'years and years of tradition unhampered by progress.' While pejorative by intent, it does hold more than a bit of truth and there are good arguments that tradition can be a good thing. Not surprisingly in this new digital world and often upsetting to the more traditional academics, Wikipedia has an excellent definition that hones closely to the beliefs of most military people. It states that "tradition is a belief or behavior passed down within a group or society with symbolic meaning or special significance with origins in the past."[13] Very few in uniform would take exception to this definition and in fact see it as bedrock to their calling. Tradition fosters a sense of personal pride, provides purpose to what they do, guidance in how to act, and objectives to achieve. Yet history is also rife with illustrations where tradition has displaced the ready need for change costing lives, battles, and possibly entire wars.

In the accelerating world described in the first section, we find ourselves at a new pivot point where the direction forward severely challenges long-held, well-founded beliefs on what war and warfare are, and how they should be fought. The current debate created over the award of a medal to those flying drones in combat, but not personally in harm's way, is a classic illustration of the more negative aspects of tradition. Questions about what happens to traditional military culture when those who write the software and algorithms for future machine-to-machine speed warfare are the real warriors need to be asked. The medal issue is, at the end of the day, rather trivial, but it serves to illustrate how the martial tradition and new technology interact. How exactly will the Services deal with war at the speed of light when the commander can no longer be in the decision loop? This question is already a reality in the cyber realm. How will the services respond when the boundaries between war and peace become blurred even further with the use of cyber attacks or biological weapons? Above all this, the element of surprise and dealing with the unexpected will become the norm.

In each of these areas, new skills will be demanded and the role of tradition, as important as it is, must find a way to accommodate the very speed of action, breadth of threats, and the infusion of new systems and approaches. Education is no exception. The methods of how to teach, what to teach, when to teach, and most importantly, how to learn continuously, must go through the same rigorous study and acceptance for change to occur.

DOCTRINE

The challenges that doctrine present to PME are similar to tradition, but their impact is more direct since doctrine is formally codified, and often takes the force of policy or orders. It is not important in this analysis to retread the arguments about doctrine being guidance or authoritative, nor try and define how the different services create and interpret that doctrine. What is in play is that doctrine, while capturing best practices and providing a starting point in any leaders decisionmaking process, also creates the danger of guiding those same leaders back to old approaches when a dynamically changing world is presenting entirely new quandaries. The historian in each of us will say that actually there is nothing new; we have seen all these things before. As comfortable as those thoughts may be, they are wrong and will magnify the danger we face. It is not that each event is "new"; it's that it is occurring faster, with less warning, from more directions simultaneously, and with far greater precision and lethality. It is different because nations are no longer the only existential

threat. Technology is empowering groups and super powered individuals—and all will emerge from hiding places across the globe. So who they are, where they are, and how they will attack—through cyberspace, biological weapons, terrorism, and smart nuclear weapons—are new and our current PME, and the doctrine that flows from it, is not preparing the minds of our next generation of leaders to think in these terms.

The solution, as with tradition, is not to do away with either, but to recognize the bureaucratic nature they present inadvertently restricting the free flow of ideas and the ready acceptance of new approaches. There is the appropriate countervailing argument that one of the critical roles for doctrine is to provide initial guidance when the way forward is unclear and to act as a buffer to rapid change to protect the Services from the 'flavor of the month'-style fads that arise. In short, doctrine ensures stability, which certainly has value. The task then is to navigate between the good and not so good values of doctrine, have the debate over needed change, and experiment with the best ideas to move the system forward. This is intuitively logical advice and in many ways, such approaches are already codified into the current system. The critical element is time. The time to debate, the time to test is taking multiple years when the threats are changing in a year or less.

BUREAUCRACY

The bureaucratic process flows from the Joint Staff down to the individual PME institutions. This section will principally focus on PME at the highest level of command, specifically, the Officer Professional Military Education Policy, more commonly referred to as the OPMEP. This document provides direction from the Chairman of the Joint Chiefs of Staff covering policies, procedures, guidance, objectives, and responsibilities at each level of PME. The problem with this document is not so much related to its substance, but the inordinate time it will take to effect change in the Joint Force itself, leaving our educational system in danger of preparing officers for a world that will no longer exist. The demands created by future challenges are moving faster than the PME system is capable of effecting change. It is the bureaucratic mindset that makes rapid change difficult. It is the accumulation of practices, directives, and incentives that all tend to work against forging into new areas and approaches to education. There is little reward for risk and experimentation in an accreditation system that measures success by how well an institution is honing closely to directives. Inertia, not recalcitrance, is the culprit.

Special Areas of Interest (SAE) represent a good case in point. This is the system that is designed to foster change in the curriculum. It follows:

A list of up to 10 SAEs is formulated annually through the Joint Staff/J-7 Joint Education Branch and approved by the Chairman, as follows: The branch invites OSD, the Services, combatant commands, Defense agencies, and the Joint Staff to submit proposed SAEs with justification for review. Initial review takes place at the annual JFEC, out of which comes an initial assessment to the Fall MECC WG. Based on the MECC WG's review, the Joint Staff/J-7 forwards the new SAE list for DJS approval via the MECC. The approved SAE list is distributed to the joint and Service colleges and schools annually during January.[14]

The intent of SAE's is worthy, providing a path for change. But the path is arduous, takes years to implement, and by the very nature of SAEs, are neither directive nor assessed. The speed-to-field of new ideas is therefore totally inadequate.

One method to define this issue is an interesting distinction between complicated and complex challenges. The military in general and the OPMEP specifically, deal well with the complicated. It carefully breaks the issues into manageable packets and sets a hierarchy of activity that moves steadily towards the objective. However, it is in dealing with the complex, which far better defines our current and future dilemma that the problem facing changes to our PME system are put into sharp relief. The complex and chaotic world, the constantly shifting interests and threats, the rapidly emerging technologies that continually change the landscape are creating different modes of warfare. Dealing with the complex requires agility, innovation, risk-taking, and a willingness to experiment.

Adapt: Why Success Always Starts with Failure by Tim Harford provides some useful thoughts on working in a complex environment. He states that "in a complex, changeable world, the process of trial and error is essential."[15] Put in more acceptable language, incentives and rewards for trying multiple experimental approaches through an iterative process will provide the clearest and most valuable results. Even more heretical to the military mind, he goes further saying that "trial and error is a tremendously powerful process for solving problems in a complex world, while expert leadership is not."[16] This moves to the crux of the issue. The world has become too complex, the speed of change too fast, and the infusion of new technologies too unpredictable to expect leaders to be able to set down a set of rules and directions, such as the OPMEP, and expect it to stay relevant. His guidance: "first, seek out new ideas and try new things; second, when trying something new, do it on a scale where

failure is survivable; third, seek out feedback and learn from your mistakes as you go along."[17] But another question remains: can the PME system follow these recommendations? For this to become a reality, the faculty must also become adaptive.

FACULTY

This study, in its examination of where the internal friction to change will emanate, has moved from the more esoteric and policymaking level of tradition and doctrine, found more substance at the operational level in the bureaucratic challenges from Joint Staff downward, and now moves to the tactical level, the academic institutions that implement PME. Each level plays important roles in determining the how, what, and why of education and no effective alteration of the PME mission can be accomplished without all levels working to that end in tandem. Before embarking on this part, it is worthwhile to remember the guidance that prompted this whole review that clearly directed that the "institutions…ensure [they] are developing agile and adaptive leaders with the requisite values, strategic vision and critical thinking skill necessary *to keep pace with the changing strategy environment.*"[18] (Emphasis added)

This study has focused principally on the intermediate and senior levels of PME and certainly at those levels, those institutions have worked assiduously to meet the goals listed above. There is unanimity in the effort to prepare our future leaders for the rigors they will face as leaders in the future, but while intent is on the mark, in execution problems develop. It is helpful to start with a quick look at the curriculum that exists, then move to the creators of the curriculum and see the frictions that exist when each institution goes about executing its educational mission.

A big picture view of curriculum is necessary, as each PME institution creates its own plans. These plans are often based on Service-specific requirements, the OPMEP as well as the expectations for what the students will require to meet needs of the Joint Force. Nevertheless, even within those guidelines, there is maneuver room in how classes are presented. Whether it is via core or electives courses, seminar or lecture formats, or travel and research components; this maneuver room can have a large impact on what students learn. Two independent studies of senior PME schools were accomplished in 2011 that touch directly on the concerns of this paper.[19] These studies were designed to assess where the weight of effort was focused within the entire curriculum. Whether they principally look at historical issues, or have more concern for current operations? To what degree did they study what the future would be? And what are the challenges these leaders would face in the remaining years of their career.

Both studies went through each core instructional period taught at that school and made a determination within each lesson the percentage that a) looked at the past; b) looked at current events; and c) looked forward to assess the new future environment. In a class that was studying World War II, the largest percentage of the lesson was, obviously, focused on reviewing the past, but it could also have a significant current events component as those historical lessons were applied to current concerns. International relations classes spent far more time with the present looking at current situations, but often looked into the past for precedent, as well as the near future for application. So such a lesson may constitute 60 percent of the time in current events with 25 percent looking back and the remaining 15 percent forecasting into the future. The final assessment between the two studies was remarkably close and ended with these statistical breakouts: 71 percent of the entire core curriculum focused on the present, 22 percent on the past, and just 7 percent on the future (but only five years into the future). In many respects this is a very logical breakout and should surprise no one. However, as clearly developed in the first section, the rate of change is accelerating and the future is becoming far more complex, the threats greater and more diverse, and the challenges arriving at far faster pace. It is a legitimate question then to ask whether a curriculum that spends just seven percent of its time on the near future is properly preparing leaders for the challenges they will face. If it is determining that more time needs to be spent looking into the future, then how can that be accomplished and what forces are at work to support or hinder that movement?

There are multiple forces at work in initiating any changes to the formal PME programs, and most create a degree of friction to such changes. This is a common battle ground for all Academic Deans and is not an enviable position. Briefly here, in capsule form, are several of the most common problems. First, there are many exterior forces at work that want to change the curriculum. It can come from other Services, institutions, senior leaders, or interest groups that all want to get their 'pet' projects into the hamper. Yet each Dean is dealing with a near zero sum game when changing the curriculum, so often anything going in will necessitate something falling out. This is not true in every case, but true in most. Second, there is the ever present 'flavor of the month.' This typically is the current intellectual rage. Total Quality Management was a good example. This program preempted substantial course time taking valuable class time away from such areas as military history, international relations, or strategy. Third, the faculty itself presents significant challenges to

change. In the school house for intermediate and senior PME, there is a cross-section of teachers normally falling generally into three camps: historians, political scientists, and military instructors. They each passionately believe that their areas of expertise are critical to the proper preparation of our new senior leaders. This dynamic tension has been very successful in creating excellent courses. However, these groups tend to work against substantial changes, especially when it moves into a field, such as future studies or technological change that they themselves have little expertise in and find the topics, as a consequence, of little value.

Finally are the directives that come from senior levels that direct what must be taught. This is at one time both a bane and a blessing to the faculty. A bane because it removes flexibility to alter the curriculum rapidly to face a dynamically changing environment and a blessing because they can hide behind those directives to preserve their own programs and forestalls the introductions of new material. As a result, there are few advocates for teaching about alternative futures, and fewer interested in weaving technology and its impact on strategic thought into the class. If the institutions are charged with preparing officers for the future leadership roles, just where, then, will that be taught? It has not been in the intermediate and senior PME courses.

Conclusion

To keep the DOD education system responsive to the services needs has been very difficult. Certain systemic problems exist that make this system inefficient, protracted, and expensive. The rate of change, the increasing threats, and the speed to field of new ideas and approaches are also changing the demands on our educational system. The PME system must now prepare future leaders to deal with war at machine speeds, groups and individuals that are existential threats, and knowledge flows that have empowered everyone. This is indeed a different world and it requires different preparation, different expectations, and new capabilities.

The underlying assumption for PME is straight forward: its purpose is to prepare our officers for future leadership roles. If the goal is the preparation for the future then certainly parts of the courses must deal with what that future may look like, and the current seven percent covering just the near future is insufficient. If that future is changing at accelerating speeds, then those officers' need an educational experience that prepares their minds for rapid and unexpected surprises which then translates into a requirement for a flexible, agile, innovative capacity in dealing with diverse emerging threats. There is little mystery in how to accomplish this academic objec-

tive. Theoretical work is readily at hand, elective course within these very institutions are already employing techniques that would scale easily to the core courses and the literature is providing interesting looks in what that future world will look like.

While the solutions are relatively easy to define, it is the mindset of those creating, directing, and executing the program that present the challenge to change. The very purpose for the long opening section of this paper on external threats is because that is where the battle needs to be fought in fostering change in our educational system. Accepting the validity of the assertions of rapid change and new ways of warfare must be debated and accepted at all echelons before meaningful change can occur. It would make the whole situation easy if directives from the top could implement all the required alterations to the PME structure, but sadly that is not the case. While clear direction from the highest echelons is necessary, it is not sufficient. No effective change can occur until all levels of the PME process are working together with a common understanding of the future and a willingness to implement change. At the policymaking level, this means that the OPMEP must modify its structure to include future studies as core, allow for experimentation among the various institutions, and foster a climate that accepts some risk and that encourages change. At the tactical level the faculty, whether a historian, political scientist, or uniformed officer, must also be educated on the impact of technical advancements and the impact those changes will have of the economic, political, and military threat environment in the future. And everyone must accept a continuingly increasing rate of change in the curriculum, the instructional techniques, and the needs of our officers because only by accepting these facts will we give them the tools necessary to be effective leaders.

Notes

[1] *White Paper on Joint Education* (Washington, DC: Chairman of the Joint Chiefs, July 16, 2012), 3, available at <www.jcs.mil/content/files/2012-07/071812110954_CJCS_Joint_Education_White_Paper.pdf>.

[2] *White Paper on Joint Education*, 3.

[3] Ray Kurzweil, *The Singularity Is Near* (New York: Viking Press, 2005).

[4] Peter H. Diemandis and Steven Kotle, *Abundance* (New York: Free Press, 2012).

[5] Mat Ridley, *The Rational Optimist: How Prosperity Evolves* (New York: Harper-Collins Publishers, 2010).

[6] *The United Nations Today* (New York: United Nations Department of Public Information, October 2008). Number of Internationally operating groups was placed at a minimum of 13,425 with a probable number of around 40,000 (and growing) in the year 2000. See Helmut Anheier, Marlies Glasius and Mary Kaldor, "Introducing Global Civil Society" in *Global Civil Society Yearbook*, ed. Helmut Anheier, Marlies

Glasius and Mary Kaldor, 3-28 (Oxford: Oxford University Press, 2001).

[7] *World Population Prospects: The 2008 Revision*, Highlights (New York: United Nations, June 2009), vii.

[8] Note: Many of the following assessments were derived from a series of research studies by the Center for Strategy and Technology titled, *Blue Horizons*, available at <csat.au.af.mil>.

[9] A. Hallam and P. B. Wignall, *Mass Extinctions and their Aftermath* (Oxford: Oxford University Press, 2002). Based on Hallam and Wignall's calculations, the combined extinction loss of the five major extinction events (End-Ordovician [84 percent], Late Devonian [83 percent], End Permian [95 percent], End-Triassic [80 percent] and End-Cretaceous [76 percent]) would be 99.994 percent of all species on earth. This figure does not include the background extinction rate between mass events, which would raise this figure still higher.

[10] Interviews by authors with scientists at Los Alamos National Laboratories. Also see the Human Proteome Project, through the Human Proteome Organisation (HUPO), Homepage, available at <www.hupo.org/research/hpp/>.

[11] Human Proteome Project, through the Human Proteome Organisation (HUPO), Homepage available <www.hupo.org/research/hpp/>.

[12] *White Paper on Joint Education*, 3.

[13] See "Tradition," *Wikipedia*, available at <http://en.wikipedia.org/wiki/Tradition>.

[14] Chairman of the Joint Chiefs of Staff Instruction, *Officer Professional Military Education Policy (OP-MEP)*, CJCSI 1800.01 (Washington, DC: Joint Chiefs of Staff, July 15, 2009, updated September 15, 2011), C3, available at <www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf>.

[15] Tim Harford, *Adapt: Why Success Always Starts With Failure* (New York: Farrar, Straus and Giroux, 2011), 21.

[16] Ibid., 22.

[17] Ibid., 27.

[18] *White Paper on Joint Education*, 3.

[19] This data was derived from two coordinated but independent studies accomplished at the Air War College and the National Defense University.

Chapter 12

Air Force Officer Professional Military Education: Ripe for Disruptive Innovation[1]

John R. Carter, Jr.

The United States Air Force can transform Officer Professional Military Education (OPME) by embracing modern distance learning (DL) as a mature medium for delivering high-quality education. OPME transformation replaces episodic, one-size-fits-all DL versions of resident programs, such as those at the Air War College (AWC), the Air Command and Staff College (ACSC), and Squadron Officer School DL (SOS), with a menu of DL courses from which officers choose those that best fit their developmental needs based on their education, training, experience and timing.[2] Through a combination of DL and resident programs, transformed OPME enables the concept of precision education: delivering the right education, to the right officer, at the right time, via the right method. Via OPME transformation, the Air Force can reach the Total Force with graduate-level education, improving developmental outcomes for all Airmen: active duty, civilian, Air National Guard and Air Force Reserve. OPME transformation is necessary to meet the Air Force 2013 vision for a "personalized, career-long building block approach"[3] and the Chairman of the Joint Chiefs of Staff's vision to leverage education, especially during times of budget austerity, as a hedge against risk in a national security environment characterized by rapid change and uncertainty.[4] By reviewing the data on the number of officers who actually attend resident programs and setting those elite educational opportunities aside, OPME transformation avoids the inevitable debate spawned by positing DL education as a tradeoff for resident Professional Military Education (PME). Instead, OPME transformation seeks to capitalize on the strengths of resident PME, relationships, and higher-level learning objectives in a face-to-face environment for those few officers selected to attend, while simultaneously capitalizing on the strengths of DL PME: portability, accessibility, and opportunity for choices applicable to career-long

learning for the vast majority of the Total Force. While this study addresses Air Force OPME in particular, the ideas presented are generally applicable across the joint education community.

History of OPME

The roots of the current OPME system trace back to the earliest days of an independent Air Force. Based on the pre-World War II Army system, Air Force OPME was built around attendance at three episodic resident programs: one at the company grade level, one at the intermediate or "command and staff" level, and one at the senior or "war college" level. While expressing the need for its own educational programs focused on air warfare (in contrast to the joint approach pursued through the establishment of the National Defense University), the construct echoed that of the interwar Army.[5] Appreciating the value of education, the Air Force quickly embraced the concept of exporting education to those officers who could not attend resident programs, launching correspondence course versions of Air Command and Staff College in 1948[6] and the Air War College program in 1949.[7]

The defining modality of correspondence, later DL, OPME delivery changed little over the years. Students received self-study course study materials in the mail, infamously dubbed the "box of books," read and studied, then requested to take the course test. If they passed, they moved to the next course; if they failed then it was back to the books before requesting a re-test. Students could form self-directed seminars, *sans* faculty, to cover the self-study material, and hold each other accountable for completing the lessons at a steady pace. In years when resources were less constrained, faculty would travel to Air Force Bases around the world to facilitate DL seminars. Still, DL OPME was characterized by the self-study "box of books."

Each of the three Air Force resident OPME schools, SOS, ACSC, and AWC, offered a DL version of their resident program. Implicit in this construct was the idea that quality OPME occurred in residence. The only-recently superseded version of the policy governing PME, Air Force Instruction 36-2301, clearly stated as much:

> 3.2. Attendance. *The Air Force Personnel Plan states that "ideally, all officers will attend PME in residence." Limited resources, however, restrict residence ISS* [Intermediate Service School] *and SSS* [Senior Service School] *attendance to the "best qualified." Nonresident programs are available to all eligible officers and civilians.*[8]

Air Force officers were expected to complete the appropriate level of OPME to be competitive for promotion. While policy decisions altered whether the method of OPME completion (DL, resident, or both) would be visible on personnel products or officer selection briefs, the fact remained that completion of SOS, ACSC and AWC was considered critical to an officer's opportunity for promotion. Officers endeavored to have their record reflect OPME completion, whether DL or resident, because either method checked the same box. The idea that the self-study "box of books" programs and resident programs provided equivalent PME experiences arose from the policy decisions which made them equivalent on officers' records, not from any educational analysis. The outcomes published in the Air University (AU) catalog were the same for the self-study programs and the resident programs for many years prior to the 2012-13 edition despite educators knowing this was not the case in practice. One rationale given for publishing the same outcomes was that the published outcomes were the "minimum" which had to be achieved (and were achieved) via DL and that the resident programs far exceeded the minimums. Such machinations were driven not by sound educational theory but by the policy need to make DL OPME completion fill the same "square" as resident OPME.

The deployment of ACSC's online masters' program (OLMP) in 2007 revolutionized the Air Force's "box of books" approach to delivering DL OPME.[9] In addition to PME credit, OLMP offers students an opportunity to earn the same accredited master's degree awarded to ACSC resident graduates.[10] Those graduates of the joint warfare concentration also earn Joint Professional Military Education Phase I credit. OLMP offers high-quality education delivered globally, 24/7, in a non-resident environment. OLMP takes a student-centered approach, offering all courses every term and giving students the flexibility to choose the order in which they complete courses. Students taking each 8-week course are assigned to seminars facilitated by a faculty member. During each weekly lesson, after completing their assigned readings, the students write a response to the faculty-member's posted prompt. They also must reply to the posts of two of their seminar mates during the week's lesson. These online responses are not blog-like entries; they comprise academic discourse requiring thoughtful argument and citation of sources. The faculty member evaluates each student's online posts in the asynchronous threaded discussion to assign a participation grade. The remainder of the course grade is determined by student performance on evaluations such as papers, midterm, and final exams. When the Air Force unmasked possession of a master's degree for the majors' promotion board, ACSC responded with two programs that en-

abled company-grade officers to earn a master's degree through OLMP: the leadership concentration (2010), open to all captains with at least six years time-in-service who have completed SOS, and the operational warfare concentration open to graduates of the Air Force Weapons School. As of March 2013, OLMP was averaging 1,100 students enrolled per 8-week term and had produced 1,943 graduates.[11]

All Air Force OPME schools have pursued innovations in their DL programs. AWC overhauled its DL program in 2011, transitioning curriculum delivery to the Blackboard learning management system, eliminating production of hard-copy readers, and deploying interactive learning activities such as the Visual Expeditionary Skills Training cultural simulation.[12] ACSC launched its newest DL edition, version 6.0, in September 2012. In addition to 100 percent electronic delivery via Blackboard, this DL program includes specially-designed interactive learning activities, online exercises, and adds three facilitated online seminars where students interact with faculty and peers.[13] In January 2013, SOS began delivering its new DL program which features interactive learning activities and concludes with a block of online facilitated instruction.[14] Clearly over the last year Air Force OPME programs have significantly improved upon the old "box of books" methodology. Even with the welcome addition of interactive learning activities and of facilitated blocks of instruction, the OPME DL programs remain, with the exception of OLMP, primarily self-study programs derived from the resident OPME programs. So which Air Force officers have the opportunity to attend resident programs?

Resident Program Attendance for a Competitively-Selected Few

AFI 36-2301, *Professional Military Education* governs developmental education (DE) in general, OPME in particular, and articulates some of the many policies surrounding resident program selection, declination, deferment, and equivalency credit. Implicit in the many governing processes and procedures is the idea that attendance at a resident DE program (or equivalency credit) is seen as a career discriminator, especially for field grade officers. Only the top 20 percent of officers promoted to major and the top 15 percent of those promoted in-the-zone to lieutenant colonel based on the promotion board's order of merit list (plus all below-the-zone promotees to lieutenant colonel) are designated as "DE selects." To be selected for a resident program, officers must first be nominated by their senior raters, then successfully compete at the developmental team (DT) for their respective career field, then compete again at the annual Developmental Education Designation Board (DEDB) to be matched to

a particular resident program attendance quota.[15] While still a competitive selection, the Air Force commits to sending all "DE selects" to a resident program during their three years of eligibility (four years at the senior level) barring any quality force issues. The path for a "school candidate" (i.e. not a designated "select" from the promotion board) to attend a resident program remains steep indeed. It is easy to see how resident DE attendance has tremendous value for its competitive selection irrespective of its educational value. The method for awarding DE equivalency credit amplifies this perceived stratification value. An officer who attends a qualifying program identified in the Air Force Instruction may petition his developmental team for equivalency credit. To receive equivalency credit, the officer must be nominated by his senior rater, then make it above the resident attendance "cut line" from his DT and the DEDB. So two officers who attend the exact same educational program may or may not receive the same "resident DE" credit based solely on where each finished in his respective DT's order of merit rankings.[16] In such a process, educational value is clearly trumped by stratification. Adding more emphasis to PME as discriminator, the Vice Chief of Staff of the Air Force published a letter in December 2009 reminding officers that DL PME completion may affect selection for squadron command and other competitive processes regardless of one's status as a "select" who had not yet attended a resident program. As highly selective as resident programs are for active duty officers, there are even fewer opportunities for members of the Air National Guard or Air Force Reserve to attend. In fact, in numbers representative of previous years, only 23 Guardsmen and Reservists are attending AWC this academic year (2012-2013) and only 25 are attending ACSC. Similarly, when CORONA (the triannual summit of Air Force 4-star generals) directed the stand-down of the Air and Space Basic Course, they also directed sufficient SOS student production to provide 100 percent attendance opportunity for line-of-the Air-Force captains. In an SOS class of approximately 725 students there are usually only 20 to 25 from the Guard or Reserve.[17] Thus DL is the only OPME program available for the vast majority of Air Force active duty field grade officers and practically 100 percent of Guardsmen and Reservists.

The Case for Change

The tendency for PME reformers to focus first on the resident programs is understandable. The artifacts of resident programs are highly visible with buildings, students, and faculty all physically located and accessible on Air University's academic circle at Maxwell Air Force Base. Plus, most senior Air Force officers are graduates

of at least one (if not three) resident educational programs. Yet for the vast majority of active duty line officers, the only PME they will ever get after SOS is delivered via DL. Many non-line or Total Force officers will never attend resident OPME in their careers, making DL the only PME they ever receive. Over the years, OPME schools produced quality self-study programs which, assuming students embraced the readings and invested the necessary study time, could produce valuable outcomes.

Unfortunately, student and alumni feedback reveals that many officers view DL not as a valuable educational program but as a "square filler." One of the unintended consequences of a "dirty purple"[18] approach to DL was a disdain for what potential exists in a self-study course. Compounding the problem, when it comes to DL OPME some mentors advised officers to "knock it out" as quickly as possible or take the tests without actually reading the course material in hopes that they could achieve a minimal pass. Unwritten "rules" proliferated such as characterizing officers' records with more than two years between promotion date and DL completion date as substandard, or requiring that an officer first complete the DL version of a program before a senior rater would recommend resident program attendance.[19] None of these informal approaches were driven by educational or developmental needs but by the need for potential discriminators between officer records.

Senior military leaders clearly have articulated the need for improved thinking developed through high-quality education. OPME transformation seeks to deliver tailored, authentic, on-demand, and agile learning while taking full advantage of the opportunities available today through improved technology and advances in learning science. The precepts of disruptive innovation,[20] the potential offered by new information technologies, improvements in DL methodologies, and experience gained from five years of OLMP set the stage for transformational change. The critical first step: shatter the paradigm that self-study DL OPME is simply a suitable, less expensive shadow of resident PME, and instead embrace DL as a rapidly-maturing educational environment that can be exploited to deliver graduate-level education tailored to the developmental needs of officers at the right level and right time in their careers. Shattering beliefs held for decades and ensconced in numerous personnel polices surrounding resident DE selection and completion is no easy task, so here is another tack at the same idea: for all but a rare few academically-talented officers, it is impossible to reach the same levels of learning through a self-study DL program as in a resident program, especially as the desired educational objectives move to the learning levels of those expected of a graduate program.[21] Even for those few rare officers, resident

programs address affective and relational outcomes that can be very challenging or prohibitively expensive in DL. Active learning in a resident seminar environment has proven for decades to be an efficient and cost-effective method of PME instruction and for some specially-selected officers precision education will mean attendance in a resident program. It was the commendable desire to export that resident education widely to the Total Force that led to self-study DL programs and eventually led to the hodge-podge of policies which emphasized equivalent PME program credit over achieving equivalent educational outcomes. OLMP demonstrated that higher levels of learning are achievable in a demanding DL program, but with a time commitment (approximately 10 to 15 hours per week during each of eleven 8-week courses) and level of dedication that is not reasonable to expect from the entire officer corps also performing operational missions. Ultimately, OPME transformation focuses on DL delivering what DL does best: portability, accessibility and precision learning and lets resident education perform what resident education does best: increasingly challenge those officers competitively-selected for special opportunities in a full-time resident program clearly differentiated from DL.

Transformation: Replacing Today's One-Size-Fits-All DL Programs

To transform, Spaatz Center schools should replace the existing one-size-fits-all versions of the three resident PME programs (SOS, ACSC, and AWC) with a menu of graduate-level courses from which officers can select the courses that best support their developmental needs. Much like civilian professional schools, course offerings will be driven as much by demand as by centralized requirements. The evidence of OPME's efficacy remains officer performance after graduation. Those officers who access education to fill their developmental needs would be expected to outperform similar officers who do not, in the same way that an MBA does not guarantee success, it is how the graduate applies the MBA that ultimately matters. The menu of courses replaces the one-size-fits-all "top down" mandate driven by centralized requirements with one composed of course options and choices to reach developmental goals from the "bottom up." It harmonizes with the Air Force doctrine expressed in AFDD 1-1, *Leadership and Force Development*, that development is the sum total of experience, training, and education which define the continuum of learning. "Force development leverages education, training, and experience to produce adaptable, creative, knowledgeable Airmen."[22] Different experiences, training opportunities, and developmental needs drive different educational requirements. Obviously there are some

expectations of all officers, but those expectations are manifest ultimately in performance. Emphasis in the transformed OPME is on outcomes such as improved performance vice inputs such as course completion or program attendance. Mentoring and feedback sessions should identify specific educational needs that can be answered by course offerings. Officers and their mentors/supervisors can pull the education they need rather than suffer through the education pushed by a centralized requirements document. Of course, students cannot always be the best judge of what they need, so it is reasonable to expect that requirements determined by outside agents (developmental teams, Air Force Learning Committee (AFLC), etc.) retain a role in the construct perhaps defining some "core" requirements. Spaatz schools, in concert with Air University, Air Education and Training Command, and the AFLC, will ensure education offerings meet core educational requirements of all officers.

What courses are needed in the transformed OPME beyond the courses offered in existing DL programs? Again, AFDD 1-1 provides a clue in its discussion of the institutional competencies:

> *Use of a common competency language promotes a common understanding of the key elements of each job and the capabilities resident in the workforce, which enables identification of critical gaps and potential solutions within the force….Competencies are attributes an individual possesses to successfully and consistently perform a given task, under specified conditions, or meeting a defined standard of performance. This enables Airmen to perform their jobs and contribute to the overall success of the Air Force. Competencies influence human performance and have a subsequent impact on mission and organizational success.*[23]

Today's PME requirements construct pre-dates the competency approach described in Air Force doctrine. It comes from a top-down articulation of requirements PME programs must meet. The Air Force requirements for PME programs are listed in Air University's Continuum of Education Strategic Guidance. Requirements from the joint community are stated in CJCSI 1800.01, also known as the Officer PME Policy (OPMEP).[24] Ultimately these requirements documents provide guidance for building OPME programs. It is an input-focused model without a "proficiency advance" option. Officers may already possess the ability to meet the required objectives but in the requirements specification there is no mention of the student, only the objectives.

Marrying the doctrinal competency model with the capabilities of modern DL fuels the proposed transformation and puts education onto equal footing with experience and training in officer force development.

In the transformed OPME construct, requirements specification begins with observation in the field of a documented performance gap in an identified competency. Those shortfalls that can be addressed through education generate the requirements for courses, tailored to meet the performance needs of the target audience and delivered at a time appropriate for the officer. While not a stand-alone educational requirements document, the institutional competency list in Air Force Doctrine drives force development and thus education. Efficient educational delivery requires tailoring courses to recognize an officer's previous education, training and experience while aiming to improve performance in the officer's future environment. As noted in the AFDD 1-1 quote above, competencies are defined not as stand-alone constructs, but in terms of tasks, conditions, and performance expectations. The same tasks, performed under different conditions and with different expectations, demand different attributes and thus potentially drive different educational requirements.

It is common practice today to balance the needs of the Air Force with the developmental needs of individual officers in the assignment process, which forms the "experience" component of the continuum of learning. To accomplish the Air Force mission and to develop the force some officers spend more time in operations assignments and others more time in staff assignments. Similarly training is targeted, usually "just in time," to develop necessary skills prior to assuming a new position via a "training pipeline." To highlight the contrast between the personnel processes surrounding developmental assignments and those surrounding developmental education, imagine if selection for joint assignments were handled the same way as it is for resident education: must be initially selected by a central board for joint assignment eligibility, must receive a joint assignment within a designated three-year window, requires an operational deferment to delay the timing of the joint assignment (with prejudice) from the three-year window, every joint-select officer must submit an AF-form 3849 endorsed by a senior rater listing assignment preferences which is then prioritized by a DT in an order-of-merit ranking of officer records with only those making the "cut" given to another central selection board for final assignment. The Air Force obviously does not make developmental joint assignments with such a system; neither should it make developmental educational assignments with such a system.

OPME transformation proposes to make quality education accessible to DTs, supervisors, and officers as a developmental tool across an officer's career. The DL courses offered in the transformed OPME construct are designed to deliver the educational component necessary for officers to meet the proficiency levels described in doctrine for competencies and sub-competencies. With a scalpel vice an ax, educational offerings can be targeted to officers with particular education, experience, and training backgrounds to improve the competency of the force. With newfound flexibility in transformed OPME, DL courses can be customized to better fit groups of learners and made available when different officers need them. For instance, there could be an introductory air operations course for non-operators that would be very different from an introductory air operations course for operators or an advanced air operations course. Joint courses could be available prior to joint assignments. Educators would have various degrees of resources available to match to the educational outcomes of the course. Lower-level learning objectives could still be met with primarily self-study or minimally-facilitated courses. Levels of facilitation would increase to meet higher levels of learning objectives, up to the fully-facilitated courses of today's OLMP. Of course, reaching higher levels of learning requires greater investment of time, money, and infrastructure for both faculty and students. Ultimately the outcomes achievable are a function of the curriculum methodology (resident, self-study, blended), faculty (qualifications, teaching ability), and students (motivation, time invested).

Respecting Airmen's Time

Respecting Airmen's time is essential to the revised concept. Using the time investment estimated for Airmen to complete today's self-study DL programs as a standard, the proposed concept equates 15 hours of expected officer effort with 1 PME unit. By that standard, today's SOS DL is 8 units, ACSC DL is 17 units, and AWC DL is 24 units. A good starting point for minimum expectations in transformed OPME is to match today's expectations. To illustrate how such a PME credit system would work, company grade officers focused on development through training and experience, would add 4 PME units as Lieutenants to 8 as Captains and earn 12 units total. Field grade officers would obtain 18 PME units at each rank level (major and lieutenant colonel) prior to meeting their in-the-zone promotion board for the next rank. This concept takes the same time investment in DL education expected of officers today, increases their course options and spreads the required education out over a

longer period, thus reducing the stress today's episodic OPME DL programs place on Airmen's time. The educational time commitment the proposed construct levies on officers in each period after promotion to major (18 units over 5 years) equates to approximately 270 hours. By comparison, the minimum physical training commitment expected from officers over that same period (90 minutes of physical training/3 times per week) equates to approximately 1,170 hours.

Officers can complete the minimum PME requirement by spreading courses out, perhaps by taking a single four-PME-credit course each year, or they can compress their courses to better fit their career/life demands. The point is transformed OPME focuses on the officers, giving them significantly more flexibility in selecting both the courses and the best time to pursue PME.

To ensure that focus remains on demonstrated performance (outcomes) vice PME "squares" (inputs) for boards, the completion of required Air Force OPME would be noted on an officer's selection brief simply as "complete" rather than by year or by quantity of credits. An officer's individual course list or total OPME credits earned would be part of the officer's education record and not reflected on personnel documents or promotion selection briefings to prevent its use as an artificial discriminator.

Individual schools, guided by the institutional competency list, and in concert with Air University, Air Education and Training Command, and the Air Force Learning Committee, would be responsible for creating and delivering DL courses that meet the educational needs of the officer corps and for developing a methodology to help officers ensure they are meeting Air Force requirements. Much as a graduate school would prescribe the courses necessary to obtain a certificate, OPME schools would ensure that officers can take a group of courses that meet externally-levied requirements such as Joint Professional Military Education Phase I. Additionally, schools will offer courses that an officer could pursue to earn an accredited master's degree, focusing particularly on captains who perceive this as a requirement to be competitive for promotion. Schools would work with Air University to ensure that courses also award graduate credit hours appropriately for application towards an Air University degree or that may be accepted by other universities as transfer credits towards a graduate degree. The concept is that, much as a university prescribes credits and particular courses or selections from groups of courses to earn a degree or certificate, schools would prescribe courses and credits to meet OPME requirements. To earn the notation "complete" in one's personnel records, an officer would have to complete the prescribed mandatory

and/or optional courses with schools responsible for ensuring they offer courses that meet Air Force requirements within the minimum OPME credits advertised for each officer level. Officers could always pursue additional education by selecting from the courses offered. OPME transformation is a vast improvement over today's one-size-fits-all programs, offering tailored courses and programs while meeting the educational needs of the entire Total Force. Resident OPME programs in the transformed construct, another manifestation of precision education, take full advantage of what they are: special developmental opportunities for those officers competitively-selected to attend. In the transformed construct, redundancy or less charitably "practice bleeding," no longer exists as there is a substantive difference between education offered via DL and that offered in resident programs.

For field grade officers, the ability to capitalize on a highly-selective student population is even more important. Realizing that the majority of officers attending resident DE programs attend programs offered somewhere other than Air University, the focus in OPME transformation is on the 52 percent of officers selected for resident DE that attend ACSC and the 32 percent that attend AWC. In addition to higher-level affective and relationship outcomes, schools can pursue unique opportunities such as Joint Professional Military Education Phase II, cross-domain operator strategist, regional affairs specialist, and grand strategy programs available only in residence. Resident schools also offer specially directed research opportunities such as *Blue Horizons* and *Cyber Horizons* which allow the Services to tap into the deep talent pool created by gathering their future leaders around the academic circle. There is also an opportunity as part of transformation to increase expectations of resident educational performance: from those to whom additional educational opportunity is given, much is expected in return. Officers selected to attend resident programs based on promotion order of merit will have to demonstrate their intellectual as well as their operational prowess.

Enabling Transformation: Resources and Policies

Transforming officer PME as described will require a redistribution of resources the Air Force currently devotes to officer developmental education to create and sustain an expanded menu of tailored, on-demand DL courses for the Total Force. To generate the necessary resource trade space, the Air Force can decrease the number of resident DE student allocations by approximately 15 percent of the total OPME student billets, distributing the reductions proportionally across all resident DE pro-

grams. The field grade officer corps will absorb the cuts by reducing (though not eliminating) the opportunity for some officers to attend two resident DE programs. The billets harvested from reductions in resident program allocations will be used to reshape the faculty of Spaatz schools. The billets in excess of the increased faculty needs can be used to generate funds for contract faculty, funds for other Air University transformation and Air Force savings. Contract faculty will augment permanent faculty as needed to meet the variable demands that allowing flexible course enrollment will place on the transformed OPME DL system.

To ensure efficient DL operations, the Air University staff should lead in developing and deploying common registration and learning management systems and technology infrastructure that meets the educational requirements of all Air University centers. Though driven by different needs, Air University cannot afford the duplication of effort that would result from each center independently pursuing necessary solutions in these areas. Whether the student is enlisted, civilian or officer, whether attending a resident program at Maxwell Air Force Base or participating from a remote location across the world, all Air University students and faculty must have 24/7 access to curriculum and the necessary information technology support expected of a university. The needs of a world-wide educational institution may diverge from those of a standard Air Force installation, and the Air University staff must continue to advocate on behalf of all Air University centers for software and hardware solutions appropriate to support the educational environment.

Just as critical as the resource adjustments will be to successful transformation are the personnel policy changes necessary to transition from PME as square-filler and substitute stratification to PME as the educational component of the continuum of learning for an officer's development. Based on the needs of the Air Force and an officer's developmental needs, resident program attendance may occur at either the intermediate or senior level or, for some small number of officers, it may include both. But personnel policy must emphasize education as development over education as stratification. The cornerstone of the proposed policy transition is to strip away some of the multiple "rack-and-stacks" inherent in the current resident DE selection process and treat DE attendance as a developmental opportunity in much the same way as a joint or Air Staff assignment. Officers will still be designated as "school selects" based on order-of-merit upon promotion to major, but the designation would remain valid throughout the remainder of an officer's career (unless removed for quality force issues). Similarly, officers not previously designated "selects" who meet

the order-of-merit quota upon promotion to lieutenant colonel will receive the designation "school select." Those designated "school selects" should have an opportunity to attend a resident DE program sometime during the remainder of their careers, balancing their individual developmental needs with the needs of the Air Force. Some officers may attend more than one resident program, again based on personal developmental needs and needs of the Air Force. But attending more than one resident DE program would no longer be an "automatic" stratification any more than completing multiple joint assignments would "automatically" stratify one officer over another who completed more operational or Air Staff assignments. Senior raters would still influence the system through the AF Form 3849 process by selectively nominating only those officers (selects and some portion of candidates) for whom the timing and developmental need coincide to recommend attending a resident program the following year. The DTs and DEDB would have a large pool of officers permanently designated as "school selects" along with some "school candidates" from which to select officers for resident programs based on senior rater recommendation, the best timing for the officer and the needs of the Air Force.

Conclusion

While OPME transformation embraces DL to deliver quality education to the Total Force, it is important to note that the concept in no way devalues resident education. For those officers selected to attend resident programs based on promotion order of merit, additional precision education will occur in a resident program preparing those officers for the most demanding leadership positions as commanders and as members of key staffs. The highly-selective resident programs will remain a critical additive investment in force development and provide an educational experience distinct from the one all officers obtain via DL. The OPME schools will continue along the transformational vector of the past few years to maximize the benefit of those resident experiences.

By diverting resources currently expended annually on giving a relative handful of officers two resident DE experiences within a five or six year period, the Air Force can significantly improve the graduate-level education delivered to the Total Force (and vast majority of active duty field grade officers) through transformed OPME. It meets the Chairman's appeal to embrace education, especially during times of budget austerity, as a hedge against risk: "This is our opportunity to harness the power of joint education to develop leaders who can meet the challenges of an uncertain,

complex, and increasingly competitive and dangerous world. We must, and will, seize it."[25] OPME transformation relies on precision, career-long education to maximize the performance of every Airman and results in a better-educated, better performing officer corps across the Total Force.

Notes

[1] The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the U.S. Government, the U.S. Department of Defense, or U.S. Air Force Air University. In accordance with U.S. Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States Government.

[2] The idea of replacing existing episodic DL programs with a menu of courses was one recommendation of a Spaatz Center Tiger Team stood up in 2009 at the request of the Air University Commander, Lieutenant General Al Peck, and led by this author. The key members of the team were: Dr. Suzanne Logan, Dr. Bart Kessler, Dr. Matthew Stafford, Colonel Al Lowry, Lieutenant Colonel Kris Bauman, and Dr. Anthony Gould.

[3] *A Vision for the United States Air Force*, January 11, 2013, 2, available at <www.af.mil/shared/media/document/AFD-130110-114.pdf>.

[4] *White Paper on Joint Education* (Washington, DC: Chairman of the Joint Chiefs, July 16, 2012), 3, available at <www.jcs.mil/content/files/2012-07/071812110954_CJCS_Joint_Education_White_Paper.pdf>.

[5] Lt Col Richard L. Davis, "The Case for Officer Professional Military Education," *Airpower Journal* 3, no. 4 (Winter 1989), 34-45.

[6] "History of the ACSC Distance Learning Program", *Air University*, Homepage, at <http://acsc.maxwell.af.mil/distance-learning.asp>.

[7] James A. Mowbray, "PROFICIMUS MORE IRRETENTI: The Air War College at Fifty," in *Air War College Commemorative History*, ed. Eddie Sheridan, 8-13 (Turner: June 1, 2004).

[8] Air Force Instruction (AFI) 36-2301, *Professional Military Education* (Department of the Air Force, June 27, 2002), Incorporating through Change 2, September 26, 2007, 10. Quotation marks in the original. The Air Force published a new version of this AFI in 2010, which removed the allusion to the desire to send all officers to resident PME.

[9] Information on ACSC's Online Master's Program can be found at, "The Air University Distant Learning Master's Course," *The Air University*, Homepage, available at <www.au.af.mil/au/dlmasters.asp>; *The Air University Catalog*, AU-10, The Academic Year 2012-2013, 73-82, available at <www.au.af.mil/au/cf/au_catalog_2012-13/AU-10_Catalog_2012-2013.pdf>. Also see Kathleen A. Mahoney-Norris and John Ackerman, "PME and Online Education in the Air Force: Raising the Game," *Joint Force Quarterly* 67 (4th Quarter, 2012), 20-25.

[10] Air University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. ACSC offers a Masters of Military Operational Art and Science.

[11] ACSC Mission Briefing, April 5, 2013.

[12] See "Distance Learning" *Air War College*, homepage, available at <www.au.af.mil/au/awc/dl_main.aspx>.

[13] See "***A NEW ACSC DISTANCE LEARNING PROGRAM***," *Air University*, homepage, available

at <http://acsc.maxwell.af.mil/distance-learning.asp>.

[14] See "SQUADRON OFFICER SCHOOL (SOS): Distance Learning Program (MSOS003)**,**" *Air War University***,** homepage, available <www.au.af.mil/au/soc/msos003.html>.

[15] Air Force Instruction (AFI) 36-2301, *Professional Military Education* (Department of the Air Force, July 16,2010), 16-19.

[16] Ibid., 24-25.

[17] AWC, ACSC, and SOS mission briefings, April 5, 2013.

[18] "dirty purple" - a term the continued use of which so long after the demise of the mimeograph machine which spawned it, speaks volumes on this issue

[19] Comments come from student and alumni survey data available at Spaatz/XA, Maxwell AFB, AL.

[20] The concepts which informed this approach come from Clayton Christensen *The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business* (New York: Harper Business, 2011). Clayton Christensen and Henry J. Eyring, *The Innovative University: Changing the DNA of Higher Education from the Inside Out* (San Francisco: Jossey-Bass, 2011) discusses the application of his concepts in the university setting.

[21] For a discussion of the hierarchy of learning objectives for OPME, see Appendix A to Enclosure E of *Officer Professional Military Education Policy (OPMEP)*.

[22] Air Force Doctrine Document (AFDD) 1-1, *Leadership and Force Development* (Washington, DC: Secretary of the Air Force, November 1, 2011), 39.

[23] Ibid., 40.

[24] *Officer Professional Military Education Policy (OPMEP)*.

[25] *White Paper on Joint Education*, 22.

Chapter 13

Building National Security through Interagency Cooperation: Opportunities and Challenges

Ralph O. Doughty and Ralph M. Erwin

The security of the United States depends on the combined efforts of our military and interagency partners within the Federal Government. It is therefore critical that all these players understand their roles and the roles of their domestic and multinational partners. Unfortunately, that is only partially the case today. This paper reviews the progress to date of interagency cooperation, and identifies the key objectives and tasks needed to attain the desired national security objectives.

The key elements required to achieve success are: 1) interagency education with partner departments; 2) interagency training and real-world experience with partner departments; and 3) acculturation of all partners through immersion in these interagency partner environments. With the maturation of this acculturation, all partner departments and agencies will begin to understand the capabilities, constraints, and needs of the other partners, thereby enabling all partners to work together more effectively to attain the desired security objectives.

Several methods for attaining these objectives are assessed in this paper. These include the preferred methods for attaining the requisite interagency education, effective means for gaining joint and interagency training objectives within practical cost levels, and preferred methods for validating the attainment of appropriate levels of proficiency in joint interagency operations. Methods for achieving the required levels of knowledge and capabilities are developed and discussed in the paper. Recommended steps to ensure that required capabilities are attained are also developed and assessed.

A History of Interagency Partnerships

Successful interagency partnerships go back as far as the British Foreign Service, which became a separate office within the British Government in 1782.[1] From

then forward, the British Foreign Service excelled in working hand-in-hand with its partner British Diplomatic Service in conducting professional cooperative actions as part of the Victorian Civil Service. It was this partnership that led to the successful application of diplomacy in the nineteenth century as the concept of the nation-state matured with its concept of state sovereignty.

From these beginnings, the British Foreign Service grew to demonstrate successfully how to work with partner government agencies within the British government. This ultimately led to the complementary partnership of the Foreign Service with the British Military, a partnership that would work for centuries to help achieve the national goals of the British Government.

Interagency partnerships have been attempted in the United States since the Revolutionary War and continued during the Civil War. Most of these early partnerships took the form of support of the military by individuals, businesses, or government departments charged with logistics, medical products, and related support. During the Great Depression in the United States that began in 1929 with the crash of the New York stock market, millions of Americans were left unemployed and destitute. Those within the Federal Government took pay cuts, but remained working.[2] When President Franklin D. Roosevelt initiated his New Deal, a new agency within the U.S. Department of Agriculture's Forest Service was created, called the Civilian Conservation Corps (CCC).[3] The CCC provided work for millions of young unemployed men, as well as World War I veterans and American Indian tribal members. The first CCC camp, appropriately named Camp Roosevelt, began operation in the spring of 1933. This 9-year long program provided an ideal opportunity for over 3 million young men to work and earn money while at the same time contributing to the growth of the nation. One of the key elements of the CCC was the fact that the U.S. Military and other agency specialists were used to train the CCC teams to help in the advancement of an orderly program of useful public works projects.

> *Throughout the CCC history (1933-1942), the number of conservation projects completed across the Nation was staggering; 48,060 bridges, 13,513 cabins and dwellings; 10,231 fire lookout houses and towers; 360,449 miles of telephone lines; 707,226 miles of truck trails (forest roads); 142,102 miles of foot and horse trails; 101,777 acres of campground development; 35.8 million rods of fences; 168 emergency landing fields; 13.3 million acres of insect*

> *control work; 6.4 million man-days of fighting forest fires; over 2.6 million*
> *acres of planting and seeding; and almost 1 billion fish stocked.*[4]

The program's funding was terminated on June 30, 1942 because its enrollees flocked to join the military in the aftermath of the attack on Pearl Harbor and America's entrance into World War II. This ended one of the most successful interagency work recovery programs of the United States. The CCC was the most popular and successful of Roosevelt's New Deal programs. Perhaps the most significant product of the CCC program was the profound and lasting effect it had on the 3 million enrollees. CCC work provided a turning point in the lives of many of the Nation's youth and it brought much-needed financial aid to their families. In addition, it created a new self-confidence, a desire and capacity to return to active work, a new understanding of a great country, and a faith in its future. The national forests, national parks, and state parks decades later still enjoy benefits from many of the CCC projects.[5]

During World War II, interagency coordination was largely informal and was mediated by President Roosevelt. Recognizing the need for deeper integration, the Secretary of State, Secretary of War, and Secretary of the Navy began holding weekly meetings to work through shared problems. However, it soon became apparent that they had no specific mandate or authority, and this weakness became apparent as they moved toward planning for the occupation of the Axis powers. So they created a State-War-Navy Coordinating Committee (SWNCC, pronounced 'SWINK") in December 1944 to address the interagency issues facing them in this occupation. SWNCC was an important precursor to the National Security Council, and represents perhaps the most successful integration of military and civilian assets in the history of U.S. foreign policy. As a result, it has received renewed scrutiny in the wake of the Iraq War as the U.S. Government (USG) attempts to overhaul the interagency national security system.[6]

The National Security Act of 1947 created the National Security Council (NSC) under the chairmanship of the President, with only the following seven officials as permanent members: the President, the Secretaries of State, Defense, Army, Navy, Air Force, and the Chairman of the National Security Resources Board. The President could designate "from time to time" the Secretaries of other executive departments and the Chairmen of the Munitions Board and the Research and Development Board to attend meetings. While the new Central Intelligence Agency was to report to the NSC, the Director of Central Intelligence was not a member, although he attended meetings as an observer and resident adviser.

President Harry S. Truman overhauled the machinery of the National Security Council in 1949, but it did not fulfill the role originally envisioned. NSC lines of authority, never clear, became increasingly blurred. President Truman was partly to blame for this, as he insisted on going outside NSC channels for national security advice, relying directly on his Secretaries of State and Defense, and increasingly on the Bureau of the Budget. Attendance at NSC meetings gradually increased to a point where the Council became too large for free discussion and degenerated into a bureaucratic battleground of department rivalries. During Truman's last year, the Council and the Senior Staff met less frequently and NSC activity abated. Much interdepartmental planning on the NSC books was never completed by the end of the Truman administration. During this period, the NSC reflected Truman's sense of frustration as a lame-duck president caught in a stalemated war in Korea.[7]

The United States again became involved in a protracted war in Vietnam that grew in intensity from 1959-1975. During this war, attempts were once again made to develop a partnership between the U.S. military and our various interagency partners. The primary vehicle during the Vietnam War for doing this was the Civil Operations and Revolutionary Development Support (CORDS) Program. This program, one of the most successful interagency coordination efforts yet, resulted in many lessons to be learned from the geographic combatant commands regarding poor cooperation between military and civil agencies and lack of a single chain of command with respect to the conduct of the war and the associated pacification efforts.[8]

These examples illustrate the difficulty the United States has experienced in building a "whole-of-government" approach to interagency coordination. One recent analysis makes the argument that just using Government assets, even if you use the whole-of-government's assets, is not adequate to get the job done successfully. [9] This is the case since virtually all government agencies do not understand free-market principles of creating a demand for products that can make a village, or town, or nation independently able to support themselves instead of remaining dependent on others for their security and well-being. It is this knowledge that normally is transmitted and supported by non-governmental agencies that is the secret to ultimate success. A combination of governmental agencies, non-governmental agencies, and civic, private, and independent companies and organizations can make the difference between success and failure when trying to implement successful, stable, and sustainable programs that result in success for a nation or region.

The continued problems are partially a result of the use of Presidential Directives and Executive Orders (EO) by U.S. Presidents in an attempt to improve interagency cooperation. These became common after the end of the Vietnam War, and continue to the present day. Two of the most recent are as follows:

1. National Security Presidential Directive 44 (NSPD 44), *Management of Interagency Efforts Concerning Reconstruction and Stabilization*, December 7, 2005.[10]

President George W. Bush issued NSPD 44 to respond to the continuing need to strengthen whole-of-government planning and response to crises abroad. The goal of NSPD 44 was to promote the security of the United States through improved coordination, planning, and implementation of stabilization and reconstruction assistance. To accomplish this, NSPD 44 empowered the Secretary of State to lead and coordinate the U.S. response across all agencies involved, and to work with the Secretary of Defense to harmonize civilian and military activities.

Under NSPD 44, the role of the Office of the State Department Coordinator for Reconstruction and Stabilization (S/CRS) was to coordinate interagency processes to identify states at risk of instability, lead interagency planning to prevent or mitigate conflict, develop detailed contingency plans for integrated U.S. reconstruction and stabilization efforts, and coordinate preventative strategies with foreign countries, international and regional organizations, nongovernmental organizations, and private sector entities. Notwithstanding this mandate, the budget initially appropriated to fund S/CRS as a separate organization within the Department of State was woefully inadequate, and the effort was drastically scaled back and finally incorporated into the normal structure of the Department of State as the Bureau of Conflict and Stabilization Operations.[11]

2. EO 13434, *National Security Professional Development*, May 17, 2007.[12]

This EO was issued by President George W. Bush to establish as the policy of the United States to promote the education, training, and experience of current and future professionals in national security positions (security professionals) in executive departments and agencies. The Order established a Steering Committee to "coordinate, to the maximum extent practicable, national security professional development programs and guidance issued by the heads of agencies in order to ensure an integrated approach to such programs."

> *The EO directed the Assistant to the President for Homeland Security and Counterterrorism, in coordination with the Assistant to the President for National Security Affairs," to submit "a National Strategy for the Devel-*

opment of Security Professionals." The purpose of the strategy was to establish a framework that would provide "integrated education, training, and professional experience opportunities" for security professionals that would "enhance their mission-related knowledge, skills, and experience" and thereby improve their ability to protect national security. The order established an Executive Steering Committee, chaired at the outset by the Director of the Office of Personnel Management, to facilitate the implementation of the national strategy.

The Executive Steering Committee was comprise officials from 17 Federal agencies and gave strategic direction for national security professional development. Leadership of the Steering Committee shifted to the Office of Management and Budget at the beginning of 2008, and an Integration Office was established a month later to provide program management. The Integration Office tracks agency progress on implementation of the national strategy, including development of agency regulations and training programs.

Once the National Strategy for the Development of Security Professionals was issued, the Executive Steering Committee developed an NSPD Implementation Plan, which was approved by the National Security Council and the Homeland Security Council in September 2008. Federal agencies, in turn, have developed their own implementation plans based on the National Strategy and the Implementation Plan.[13]

This Executive Order was issued for implementation subject to the availability of appropriations, and stated that this order "shall be implemented consistent with applicable law and authorities of agencies, or heads of agencies, vested by law, and subject to the availability of appropriations."[14] Subsequent to this Executive Order, such appropriations were severely curtailed, and no proposals were initiated from the 112th Congress on this topic. As a result, limited activity is currently underway under this Executive Order.

The above illustrates the importance that the U.S. leadership assigns to the topic of Interagency Coordination. What it also illustrates, however, is that they are not currently willing to expend large sums of money to ensure that it is successful. As a result, smart ways of achieving the desired goals are the order of the day. The follow-

ing sections of this paper describe methods of achieving these goals in a realistic and affordable manner.

Assessment of Current Interagency Programs

In an attempt to identify the specific objectives and tasks needed from interagency programs in the 21st century, it is vital that the U.S. embrace a global tenet that interagency partnerships are critical enablers for achievement of national security objectives. "The global security environment presents an increasingly complex set of challenges and opportunities to which all elements of U.S. national power must be applied."[15]

Interagency unity is vital to U.S. national security and the ability to respond to threats, project power globally, support diplomatic efforts, and enable global economic stabilization. It is clear that a 21st century interagency process must be utilized that is dynamic and resilient in order to respond to continuously fluctuating global situations. This requires that the USG entities, international, non-governmental, and non-profit departments and agencies be synchronized with the operations of the uniformed armed forces of the United States both domestically (as was done for the CCC) and internationally. All interagency partners are considered to be vital instruments of national power and as such they should work vertically and horizontally with the military's Combatant Commanders and U.S. Ambassadors in support of national security objectives. Based on conversations with mid-career military officers at the U.S. Army Command and General Staff College who have served in multiple wars over the last 10 years, it is obvious that in the first decade of the 21st century, the USG used 20th century approaches to address 21st century problems. As a result, all of the desired end states were not achieved. According to the U.S. military's current Joint doctrine:

> *A whole-of-government approach integrates the collaborative efforts of the departments and agencies of the USG to achieve unity of effort. Under unified action, a whole-of-government approach identifies combinations of the full range of available USG capabilities and resources that reinforce progress and create synergies.*[16]

Given this Joint doctrine and the current budget constraints, the solution must determine how to incorporate the needed interagency participants within existing overall funding levels in such a way that it benefits all participating departments and

agencies. To develop this solution effectively will require an understanding of why many USG military and agency leaders consider it to be too expensive to enact a Whole-of-Government mandate. One possibility is that leaders may be fearful because interagency collaboration is unfamiliar terrain or considered too revolutionary. Another reason is that they may fear losing control of their funding streams or being placed under the control of someone else. They therefore assume that this is a revolutionary approach and resist it accordingly. So the new "revolutionary policies" must address not only how they will make the current policies more effective, but also how the sum of the efforts in each department/agency can work together to make this new interagency process greater than the sum of the individual parts.

Geoff Demarest asserts that "The government in 'whole-of-government' … is that of the local society."[17] Perhaps this is why Colonel Eastman stated that a whole-of-government approach has been only half the answer. His paper showed that there is a strong need to apply the depth of appropriate nongovernmental organizations, intergovernmental organizations, and international diplomatic, information, military and economic means to achieve regional and global security stabilization via economic growth, to meet the dynamic national security objectives of the 21st century. Moreover, what Secretary of State Colin Powell stated in 2001 is still valid today.

> *Because in this increasingly globalized era, issues that we face are so deeply intertwined, so complex and so transnational that no power, not even a superpower, can solve them on its own. The very nature of the 21st century world and the problems that this world has brought to our door makes cooperation between government and [non-governmental agencies] not only highly desirable, but absolutely essential and necessary.*[18]

Mindset Changes Are Needed

The current approach of simply maintaining the status quo and waiting for additional funding is inadequate. It results in slow progress which will not leverage the lessons learned by the military and interagency apparatus of the USG in Afghanistan and Iraq. It also does not leverage the capabilities inherent in EO13434 or the earlier 20th century approaches described above.

The 21st century interagency collaboration challenges require the USG to develop revolutionary critical thinkers who can adapt to unpredictable situations. Many

non-state actors are regional but also have global reach using a combination of ancient and modern technologies. These unscripted, radical actors have proven that they can strike high-visibility targets which puts fear in common people. In addition, there are serious potential threats from nation-states in the Asia-Pacific, Middle East and North Africa. A new approach to turn these interagency and national security challenges into sound opportunities is urgently needed, but to do so will require new and innovative methods of interagency cooperation.

A preferred and sequential approach to address these problems may be described as follows:

1. Establishing department and agency policies that clearly articulate, and even mandate, interagency participation and cooperation. Defining objective standards for measuring the effectiveness and performance of interagency cooperation and coordination is an achievement that has eluded us to this day.
2. Gathering metrics that will institute a path and criteria for the workforce to be educated on Joint and Interagency cooperation, coordination, and communications. This model is currently underway at the U.S. Army Command and General Staff College (CGSC) and the Joint Forces Staff College (JFSC). The foundation of this education involves the teaching of critical and creative thinking.
3. Continuously training the workforce, in parallel with continuing education, is also necessary to enable Joint and Interagency methods to be applied among all participating agencies. Training teaches individuals how to use their education to implement policies and manage the distribution of those policies and methods to the workforce in response to real-world operations.
4. Establishing and leveraging relationships is critical. One of the results of the interagency education process at CGSC is that the individual students are immersed in an interagency environment in which solutions are developed in a team environment. This results in the establishment of relationships between individuals from all partner agencies that will prove extremely beneficial in future real-world situations.

As an interagency leader, 'what you know,' 'who you know,' and 'who knows you' are very important, since each of these prepares an individual as an interagency leader for real-world operations. By becoming educated in an interagency environment and

then training in an interagency environment, you and your organization's cultures, policies, and philosophies become integrated with the missions of your partner elements for future service any place in the world to conduct combat operations, humanitarian assistance missions, or disaster relief. The incentive to accept joint and interagency objectives in a collaborative versus competitive environment will result in a win-win for the "home" team. This incentive ensures that all partners can share in the success of coordination and cooperation as a team.

Conclusions

U.S. Marine Corps General James E. Cartwright, former Vice Chairman of the Joint Chiefs of Staff, once said that "In the execution of interagency operations, there is no such thing as Command and Control. The correct terminology is instead Coordination and Cooperation."[19] Pragmatic interagency solutions therefore rest with leaders who envision an educated workforce of trained individuals that live and breathe interagency coordination and cooperation on a daily basis. These solutions require a serious commitment to the preferred approach of synchronizing funding, personnel, and the application of coordination and cooperation in order to be successful.

The most recent interagency legislation in the United States is Public Law 112-239, governing Interagency Personnel Rotations as part of the 2013 National Defense Authorization Act.[20] This legislation was signed into law by President Barack H. Obama on January 2, 2013. The primary provisions of this law for interagency professionals include the following categories: Finding, Purpose, Location, and Funding as discussed below.

- Finding: Congress finds that the national security and homeland security challenges of the 21st century require that executive branch personnel use a whole-of-government approach in order for the USG to operate in the most effective and efficient manner.
- Purpose: The purpose of this section is to increase the efficiency and effectiveness of the Government by fostering greater interagency experience among executive branch personnel on national security and homeland security matters involving more than one agency.
- Location: The Program will be established within the Executive Office of the President.
- Funding: No additional funding is allocated in PL 112-239 for the implementation of the Interagency Personnel Rotations.

This approach is in line with what can be expected to work in future years. It is, in fact, very similar to the program that has been in effect at the CGSC since 2009. The *CGSC Interagency Exchange and Fellowship Program* allows selected USG departments and agencies to send employees to CGSC as Interagency Students in the various educational programs at the College. In addition, participating departments and agencies host specially selected U.S. Army majors as CGSC Interagency Fellows to serve for 11-12 months in fully integrated staff positions within the departments and agencies. This results in a true win-win for all participants. The Interagency Students are immersed in the military courses of study with Joint Service majors. Both the interagency students and the military students learn a great deal from the varying perspectives they each bring, thereby resulting in a richer learning environment for all. Similarly, the Army Fellows are immersed in the various departments and agencies and truly learn by doing—what the Army calls "Experiential Learning." Each of the participating departments and agencies, as well as the Army, expends their own funds in the execution of the program. As such, it is very similar to the provisions of PL 112-239 in that it offers an interagency rotational assignment in both directions that benefits all participants, thereby leading to a successful way to further the goals of building national security through interagency cooperation.

Successful interagency cooperation requires serious and revolutionary proposals that may include department leaders making long-term decisions for the betterment of their own as well as other agencies. Interagency education and assignments must be considered career enhancing in order to attract the top talent and performers. Determining the required interagency coordination priorities and allocating resources down in the trenches is needed as part of an ongoing operational approach. This must be implemented in a very visible way to show that interagency teamwork is integral to developing future leaders who can address the complex and unpredictable national security challenges ahead.

A new publication by Sean Roche analyzes legislation that would do essentially the same thing for the interagency partners that the Goldwater-Nichols Act did for the Department of Defense.[21] This type of act would set up certain requirements for all departments and agencies in the Federal Government to ensure that key officials were educated and trained for the interagency roles they would be expected to fill in future contingency and disaster relief operations. The final conclusion of the paper was that this type of Goldwater-Nichols solution would not be practical for all the key agencies in the entire USG.

Recommendations

So what are the military and civilian agencies expected to do to accomplish their missions effectively? First, key interagency personnel must be educated in an interagency environment that includes both military and non-military agencies so that they become acculturated to the point where they fully appreciate the culture of their partners and clearly understand how they operate and why they do things as they do.

Second, key personnel need to have real opportunities to actually work together in exercises that are intended to immerse them in an environment similar to that which they would face together in contingency and disaster relief operations. As noted earlier, teams only learn effectively by experience. The analogy is similar to a football team choosing up sides and starting to play an opponent without a playbook and never having practiced together. This is analogous to what USG interagency teams have been doing in the past. So we must realize that this is a losing proposition that must be changed.

Finally, officials who serve in these kinds of immersive educational and training environments must be rewarded appropriately. These experiences by the interagency officials must be treated as "Career Enhancing Events" by the heads of each of the participating agencies instead of detours along the way. If they are not, employees will get the message quickly that their leaders do not value preparing for and participating in Interagency Operations. When top-notch interagency officials get promoted to bigger and better positions with increased responsibility, then and only then will their counterparts take note that the leadership is serious about interagency expertise and participation. The way to do this is for agency leaders to ensure that those completing the required education and training are appropriately recognized and are eligible to compete for promotions to increased levels of responsibility and authority. The education side should include recognition from the Joint Staff (for military personnel) and the National Security Staff (for civilian agency participants) to help them move on to the next levels in their respective organizations.

So how can this be done in light of the current status of legislation from Congress and the priorities established by the National Security Council? The only thing that all departments and agencies respond to in today's environment is money. It is recommended that Congress should carve out some separate funding that can be allocated to participating agencies that is "fenced" for use only in interagency education and training for that agency. These funds could be used very effectively, for example, to provide a "Training Float" to make an additional employee available to

cover the duties of an individual who is sent to educational or training programs with interagency partners. This is particularly important for departments and agencies with small budgets that are loathe to spend their precious dollars for interagency education and training.

The key benefit of this approach is that Congress would not be micro-managing the interagency partners by telling them exactly how to educate and train their employees. Instead, they would be incentivizing them to invest in badly needed interagency capabilities that are essential for success in future contingency and disaster relief operations. By focusing on this approach, Congress could ensure that the funds were spent appropriately, or otherwise the funds would revert back to Congress or to another agency that is leading the way in building national security through interagency cooperation by leveraging education and training opportunities and overcoming challenges effectively. The framework established by Public Law 112-239, *Interagency Personnel Rotations*, could be an excellent vehicle for providing the appropriate funding for the needed interagency education and training rotations to accomplish the above objectives.

Notes

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[5] Ibid.

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[19] General James E. Cartwright, Remarks at National Defense University during his tenure as Vice Chairman of the Joint Chiefs of Staff.

[20] *National Defense Authorization Act for Fiscal Year* 2013, Public Law 112-239, January 2, 2013, Title XI—Civilian Personnel Matters, Section 1107, Interagency Personnel Rotations, 343-346, available at U.S. Government Printing Office.

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Part Four

International Attitudes

The first panel on Day 2 of the conference began with a variety of International Attitudes on transformation and leadership. Derrick J. Neal, Professor at the Defence Academy of the United Kingdom, led off with a presentation titled Transforming the UK MOD: Don't Leave the People Behind. Professor Neal focused on the challenges associated with change in large bureaucratic defence organizations. Despite an obvious imperative for change, the short tenure of military officials, a natural resistance to new methods, organizations and routines, and a shortage of leaders with the necessary skill sets for leading change hinders meaningful and timely change. Using the 2010 UK Defence and Security Review as a lens, Professor Neal cited the absence of a strategic framework which has been driven by pressures to remove capabilities to meet budget goals as an example of a suboptimal approach to change inside the UK Ministry of Defence. While matching a long-term strategic framework to a short-term budgetary timeline is always challenging, it is essential to a rationalized strategy. Moreover, as he emphasized repeatedly, a focus on people and cultural change will be critical to the successful implementation of transformative plans.

An analysis of past and current practices suggests at least four conditions are needed for transformational change: leadership, effective people, implementation, and resources. All are interrelated, and all should be consciously addressed. The UK Defence Ministry is moving to a New Defence Operating Model which, among other things, removes the Service Chiefs from the Defence Board, but empowers them with budget authority over service budgets. This represents an attempt to keep the Board focused on strategic decisionmaking. Historically, major change decisions fail some 70 percent of the time, and so identifying and avoiding the common causes of failure are essential. While Strategic Planning and Change Leadership functions are in place, Transition Management constitutes a "missing piece" that inhibits the process of transforming organizational cultures to cope with a new strategic environment.

Among many factors, leadership—particularly at the top—is critical to leading transformational change. Senior leaders must be realistic in establishing timelines to deliver change (which usually takes several years), and must ensure that appropriate investments in time and money are a priority. In the process, effective communication across the organization must be employed as a strategic tool to avoid stovepiped

thinking and achieve a common vision. Neal closed his presentation by emphasizing that key steps required for transformational change will not happen because senior leaders direct them, but rather through a fundamental change in mindsets across the Ministry. This is a *sine qua non* for meaningful change. Understanding the need to alter organizational culture is thus a key component of transformational change.

The panel's second speaker was Colonel Ng Wai Kit, Commandant of the Singapore Command and Staff College. Colonel Ng provided a comprehensive overview of Singapore's innovative approach to leader development and education. A young nation, Singapore is less hindered by long tradition and custom and has adopted leading edge approaches and practices which apply transformational leadership concepts throughout the professional development life cycle. Some, but not all, have been taken from proven, successful business practices or innovations in civilian education that are applicable to professional military education.

Colonel Ng's presentation highlighted the importance of learning networks, self-directed learning, and knowledge management as integral components both of leader development and for the learning organization (the Singapore Armed Forces in this case) as a whole. This departure from more traditional approaches is driven by increasing operational complexity, technological advancement, and a more open and transparent society enabled by social media. Formerly, the military was able to operate in a more self-contained way. The operating environment today is quite different. Future senior leaders will have to "self-discover," generating their own insights assisted by mobile devices that facilitate learning directly at the point of need. The Singaporean Armed Forces organize their Professional Military Education accordingly, both pedagogically and with its facilities, classroom organization, and teaching approaches. A key operative principle embedded throughout is an awareness that "learning to learn" must inform all professional and leader development.

The third and final panel presentation was given by Professor Peter Olsthoorn of the Netherlands Defence Academy, who offered Dutch perspectives on leadership. Like many other NATO militaries, Dutch leader doctrine stresses the concept of mission command—the idea that in the chaos and friction of combat, key decisions can best be made by the leader or commander on the spot, informed by a clear understanding of the mission and the higher commander's intent. This approach to leadership requires a high level of trust and confidence, supported by every day leader practices that reinforce mission command (i.e. "work as you fight"). This in turn requires careful development of junior leaders, as greater autonomy and responsibility demands more capable junior leaders.

However, Dutch doctrine also recognizes that under certain conditions, political sensitivities, scarce resources, or other considerations may require a higher degree of centralization. Inherent throughout is an appreciation that leadership and command is personal. Each leader will motivate subordinates in individual ways based on personality, strength of character, experience, and others. Leadership doctrine and development should allow for variations in style and method. Leader selection and promotion should also acknowledge that different leaders may lead differently, within an overarching common framework.

Looking forward, the Dutch armed forces has looked closely at its experiences in Bosnia and Afghanistan to update its leadership "vision," which incorporates multiple perspectives on leadership (transformational, team, authentic, adaptive, ethical). Practical leadership experiences and lessons learned can thus inform more theoretical approaches. Leaders perform many functions. They mentor, innovate, facilitate, coordinate, monitor and direct. But, principally, they influence followers to achieve desired outcomes in ways consistent with the nation's values and the commander's intent. There is no formula, but the doctrinal principle and the processes mentioned above provide the foundation for effective leadership.

Professor Julian Lindley-French outlined an international perspective in his keynote address from a very effective workshop held at Wilton Park in the United Kingdom in May 2013, followed by the Conference of NATO Commandants convened at Oslo three weeks later. The key is that the link among comprehensive defense education, NATO, Smart Defence, and the Connected Forces Initiative (CFI) must be firmly established. The complex, uncertain, and ever changing global environment with shrinking defense budgets makes it essential for transformed armed forces to be linked to transformed defense education. Sustaining this unity between armed forces and educators will require an ongoing demonstration of utility, affordability, and relevance. Actions must be taken in the context of a long view that projects the future of the education and training some twenty years in the future. This reflects what will be needed by officers and non-commissioned officers during their careers. Professor Lindley-French presented several recommendations for NATO to adopt. It is up to NATO leadership to highlight the best training and education practices for the Alliance, helping to set standards for education and training as well as promoting the use of new technologies in education and training. It is important for the Alliance to exploit the military-education partnership fully with each appreciating the value they add to the overall national goals. NATO defense education is central to its stra-

tegic mission. People and their knowledge will remain a critical enabler of success in an era of complexity.

Together, these four presentations portray forward-looking approaches to leader development and organizational transformation in a strategic environment marked by complexity, resource scarcity and emerging threats—but also opportunity. Historically, great pressures can lead to this kind of transformative change needed to adapt to new conditions and new requirements in ways impossible in normal times. And the times are hardly normal. A continuing global economic crisis, a chronically unstable Middle East/North Africa region, the Iranian nuclear program, the Syrian civil war, a tense and difficult relationship between Russia and the West, the growing influence of the Asia-Pacific region over global affairs, and the post-conflict mission in Afghanistan all confront partners and allies with potential challenges that must be faced. Terrorist threats to the territory and populations of friendly states, the very real cyber threat posed by state and non-state actors, demographic, governance and economic trends driving migration and immigration, and climate change will all shape the strategic operating environment, sometimes in unexpected ways.

Against this backdrop, defense establishments will face continuing pressures to restructure to reduce operating costs. A more active and perhaps aggressive China raises issues throughout the Indo-Asia-Pacific region and indeed the world. NATO, the world's premier security alliance, faces real challenges to its cohesion stemming from U.S. concerns about burden sharing and its rebalancing towards Asia. As leading nations broaden their global outreach and expand their partnerships, non-traditional interests in the global commons will loom larger. The growing attention paid to the doctrine of Responsibility to Protect will also impact the international community. In ways both expected and unexpected, strategically skilled and competent leaders will play an ever more important role in shaping an international environment that is at once more promising and dangerous and it is vitally important to pay attention to what our allies are doing to help learn the best lessons ourselves.

Chapter 14

Comprehensive Defence Education: Making Smart Defence Smarter

Julian Lindley-French

We talked of the education of children; and I asked him what he thought was best to teach them first. Johnson: "Sir, it is no matter what you teach them first, any more than what leg you shall put into your breeches first. Sir, you may stand disputing which is best to put in first, but in the meantime your breech is bare. Sir, while you are considering which of the two things you should teach your child first, another boy has learnt them both.
—*A Conversation between Boswell and Dr. Samuel Johnson in Boswell's Life of Johnson*[1]

Introduction[2]

Transformation is best defined as a change of form. Making Smart Defence smarter will require nothing less if Joint Professional Military Education (JPME) is to be transformed into a strategy, security, and military education model that generates learning outcomes that can properly prepare the twenty-first century joint warfighter for mission success. The need is pressing. British Rear Admiral Sir Doveton Sturdee in the aftermath of the 1916 Battle of Jutland said,

> *There can be no doubt that our system of peace training (i.e. education and training in modern parlance) has not been ideally suited to the requirements of modern war...It is almost inevitable now that we must reap what we have sown, but anything that can be done to foster and encourage qualities of initiative and bold leadership will, ever now, be of infinite value to us.*[3]

Quite simply, if the North Atlantic Treaty Organization (NATO) fails to promote intellectual interoperability across its armed forces and beyond then not only will NATO's deterrent influence fade. The ability of the wider Western world to generate complex combined and joint coalitions to succeed across the conflict spectrum will also fade. However, the essential dilemma of Professional Military Education (PME) in the contemporary age is that institutions are shrinking while simultaneously dealing with a larger number of difficult missions and issues over greater time and distance than before, all of which require ever more complex partnerships to succeed.

To deal with this dilemma, it must be acknowledged that the very terms *Joint Professional Military Education* and *Professional Military Education* are too restrictive and misleading. Simply put, the concept of *education* itself is too narrow to convey the knowledge and learning needed to succeed in the complex missions that the 21st century will undoubtedly generate. Indeed, both terms fail to communicate the level of ambition needed to not only empower the learner, but to change their mindsets, which is vital if transformed forces are to succeed.

The complexity of the security environments in which armed forces will operate will demand new hybrid learner outcomes. Such outcomes can perhaps more accurately be described as necessarily covering the theory, concepts, and practice of strategy, defence, and security. Therefore, what is needed across the Alliance is a new comprehensive defence education (CDE) model, a system of education and training that generates the critical knowledge the learner needs to succeed at every level of mission command in the contemporary and future security and battle-space. Given that context CDE would present a change programme aimed at enhancing the role of education in preparing military leaders and in turn ensure an enhanced priority for education.

CDE will be a vital component of smart defence. NATO must not only be smart but smarter than any adversary or groups of adversaries. The 21st century has enough of an audit trail to confirm that this will be an age of friction at all levels of conflict and that deterrence and effect will be based on comparative advantage with knowledge at the tip of the spear.

Therefore, comprehensive defence education must be defined as the knowledge, skills, and competences required to meet contemporary and future strategic, operational, and command challenges. This definition will include and promote a continuum between education and training with the former focused on how to think, whilst the latter supports new thinking with new doing.

Such an assertion is not to suggest for a moment that the fundamentals of PME must be forsaken for some woolly-wide concept of education. There will still be a place for the classics of strategic theory within CDE. However, if the mission is to prepare the joint warfighter for mission success in tomorrow's conflict environment a new balance must be struck between mastery of the martial arts and sciences and enabling the wider set of relationships that will be vital to said success.

Critical to such a transformative end will be a new best practice culture that can be identified and shared across the Alliance with the specific aim of promoting knowledge-based strategic and theater-awareness and, of course, intellectual interoperability. All of these CDE-generated elements will be critical to the strategic unity of effort and purpose itself vital to influence and effect across the conflict spectrum. Specifically, that new thinking must be underpinned by a new military-academic partnership about what is taught in CDE, to whom and how it is taught, and a shared understanding as to how best practice can be tested and disseminated. This process must take place not just within single states but across both the Atlantic Alliance and the European Union and thereafter beyond to key partners. Central to such ambition will be the need to see learning as a vital element in comparative strategic advantage in what will be a hyper-competitive strategic security environment. That in turn will demand an understanding of the levers of advantage, specifically how best to use technology in learning as information technology takes education onto a new level of adaptiveness.

Above all, both military and education professionals must have the courage and ambition to grasp the radical change in both practice and structure needed to realise CDE and the vital military-academic partnership upon which it must be built. Today, PME is hardly joint at all and far too reflective of baronetcies of self-interest that render learning too often atomistic and episodic.

Generating Transformation in CDE

There is no single definition of military transformation in NATO. However, the United States defines transformation as, "…large-scale, discontinuous, and possibly disruptive changes in military weapons, concepts of operations (i.e. approaches to warfighting), and organization."[4] This lack of an NATO agreed definition has led 'transformation' to become a much over-worked and misunderstood word. Indeed, experience of recent campaigns led to campaign design which had necessarily to incorporate host nation governments and forces and allied and partners forces

and civilians. Complexity was exacerbated by allied and partner forces operating at different levels of capability and under varying rules of engagement and different command arrangements all of which made the lot of the commander uncertain. This uncertainty led in turn to enforced decentralisation of mission command. All of the above factors are likely to be repeated in future coalition operations and points to the need for a transformation of the military mind. The strategic environment will change radically over the coming decade both in terms of the balance of power, the balance of capabilities and the balance between people and technology and yet for all the use of the "T-word" PME remains inherently conservative—an afterthought to defence strategy. In fact, given the imbalance between resources, commitments, and ends, ways, and means knowledge and learning should be a critical domain of engagement. This revealed truth will become particularly apparent as NATO enters the strategic age of the global commons. In the future super-domain of operations no single military service or country will own the security and/or battle-space which will span land, sea, air, cyber, and space.

Given the rapidly changing strategic context a new concept of knowledge will be needed as the base upon which CDE is established. NATO armies have also gone through a decade of campaigning in Iraq, and particularly Afghanistan, as well as other regions of the world. It is vital that the relevant knowledge gained from these experiences is systematically exploited. A very real danger exists that such 'corporate knowledge' will be lost rapidly to the Alliance and its members because there is no effective mechanism to capture such knowledge and distribute it. Moreover, some members may wish to move away from the modes of warfare operationalized in these campaigns. Therefore, the specific challenge in the near-term will be to consider what works and what does not in PME. By enhancing intellectual interoperability amongst Alliance partners both in a future deep joint environment as well as the complex combined environment in which coalitions will be at the centre of force generation and command and control. Within that context how best to focus the learner will be the central challenge: what does the learner need to know and how best can the learning relationship be sustained throughout the military career and standardised across the Alliance?

Intellectual interoperability, the sharing of the best strategic and military ideas across NATO with the aim of establishing shared best military practice will in turn demand a radical overhaul of PME. Such a demand will be difficult, however. Any such reform, as reforms so often do, will go against a pressing bureaucratic tide in

which process is too often placed above good strategy, and in which efficiency is seen as more important than effectiveness. Only leadership from the very top of NATO can overcome such inertia. At the very least the military (and civilian) learner must be placed at the heart of the outcomes. Change will demand a vision from a military, leadership which is often too busy with operations to consider the role of education let alone CDE. Therefore, educated choices will be needed about what exactly military leaders want and can expect from CDE, and indeed what CDE can offer. CDE must be driven from the top even if it is shaped by the educators and learners. CDE can be transformational because it can be used as a vehicle to systematically identify, adapt, and apply the very latest professional educational concepts and technologies to create an immersive learning environment that could be shared across the Alliance and beyond.

Given the nature of emerging security challenges and the fiscal austerity currently inflicted upon Western budgets, no single actor can afford or guarantee security or defence on their own. That is why a community such as NATO came into existence in the first place. It is this same level of cooperation and communal necessity that will drive the CDE. Whilst much of the CDE effort will take place at national levels, it is these same communities of grand effect that will be in a position to champion strategic unity of effort, purpose, and knowledge; and from that, prevail.

Therefore, the first and most pressing challenge facing Comprehensive Defence Education is to convince commanders and policymakers alike of the value of learning and that time should be invested in it. Four specific strategic challenges face CDE: First, demonstrating the value of CDE; Second, the setting of goals for education, training, and research in a shifting strategic environment; Third, the relationship between CDE and the rapidly-changing civilian academic market; And finally, the growing gap between the generations over the use of technology and the culture of learning.

It is precisely during such austere economic times that education should be seen as a key enabler of human capital. It is human capital that is, at least for now, the comparative advantage of NATO militaries against all foes. Instead, CDE is being systematically cut across the Atlantic Alliance as the medium-to long-term is abandoned in favour of the short-term for no other reason than the costs of such cuts will not be immediately apparent. Indeed, since 2008 defence education has been cut by 30 percent on average.[5]

The fervour with which budgets have been cut has not been helped by the seemingly interminable and ultimately pointless debate within the CDE community. These

debates have focused on the balance to be struck between education and training,[6] the needs of the joint warfighter and the wider security community, and between the national and the international. In fact, there is a continuum, a spectrum if you will, between education and training and as such there should be no insuperable barriers to strategic unity of effort and practice in CDE if sufficient will can be generated to inform a much needed Alliance defence education vision. This continuum is evidenced by the great strides being taken in the education of Non-Commissioned Officers (NCOs).

Naturally, education will vary according to the level and capability of the learner. It should also be tailored to support careers that specialise within the many security domains. However, the use of data in education to monitor individual progress and preferences suggests that 'adaptive learning' is now a very real goal. Adaptiveness, i.e. a system of education and training flexible enough to respond to the changing needs of the learner and ways of learning, should enable CDE to both produce brilliant mechanics at the mid-level and at the same time be able to reinforce the intuition of senior officers on strategy, which is vital to success in de-centralized mission command—a concept of military command which emphasizes freedom at the tactical level and the need for speed and initiative, albeit within the context of the commander's intent.

Central to any future concept of CDE will be tailored career-long learning relationships that can identify early talent and foster an elite corps of officer-scholars and yet at the same time be able to meet the needs of non-commissioned officers and enlisted personnel. This continuum, of both personnel and CDE, must therefore be agile enough to recognise the unique talents of the next General David H. Petraeus or Admiral James G. Stavridis, as well as able to support more modest careers of those who make up the overwhelming bulk of the combined armed forces of NATO.

A Roadmap towards A CDE Vision

If the potential to promote transformational change in military art and science implicit in CDE is to be realized cultures, content, and processes will need to be changed in organizations in order to promote real transformation. Such change will take time and will require national security leaderships enlightened enough to understand the problem and define a way ahead. The 'way ahead' will in turn require a roadmap so that change can be quantified and measured. One of the many roadblocks in the transformational journey of PME to comprehensive defence education

is and will be the conservatism of the military education community. In spite of the excellent work done across the Alliance there is too often a tendency in too many places to teach not what is required but what is known. This disconnect between learning input and learner outcomes also extends to the research community. Critical to CDE should be a much tighter focus on the needs of the learner and the outcomes to be generated for the learner. The need to support the joint warfighter at every level of mission command will, in turn, demand far greater unity of effort and purpose between armed forces, educators, and researchers. To that end, a new CDE roadmap is needed. Such a roadmap should be overseen by Allied Command Transformation (although not driven by it) towards a new CDE vision that encompasses and embraces the many separate developments now taking place across PME.

At the policymaking level, the transformation of armed forces should become much more closely linked to the transformation of PME. Indeed, by highlighting the best CDE practices across the Alliance, standards can be set for a CDE, particularly as it concerns the use of new technologies and the standardisation where possible of qualifications. Underpinning this view of CDE should be a commitment to a long-term defence education vision that outlines the agreed upon goals, focus, and cost. Indeed, it is vital that NATO nations take a 20-year view, at least. Simultaneously, such a policy would enable Allied Command Transformation to better focus its efforts on helping nations to shape the future of a CDE strategy.

Since 2009, NATO has been trying to develop a holistic approach to CDE by aligning PME to horizon-scanning scenarios established by the Multiple Futures Project. This alignment must reinforce the NATO Joint Force Trainer that now executes education and training based on goals/requirements set by Allied Command Operations and NATO Headquarters. Education and training has itself recently been re-structured into three major components: Global programming with structures and responsibilities defined to shape a broad spectrum from the political to the tactical, and under the lead of a Requirements Authority; Operationalization of the requirement via a Training Requirements Analysis under the lead of NATO's Joint Force Trainer; and heads of defence academies translating the requirement into properly-aligned programmes and curricula through the Training Requirements Analysis. This approach promotes transferability and therefore more efficient and effective education and training by helping to identify a solution based on the best NATO/national provider.

Transparency is critical, and to that end the Alliance has made strategy and material, as well as the training management system, open to the public domain

through www.e-nato.net. Indeed, transparency will be critical for CDE as much of the work in the future will likely be carried out by educators and researchers beyond the traditional domains of defence working in such areas as civilian security operations, aid and development programmes. Indeed, if the best and the brightest are to be attracted they will insist on levels of academic freedom that will challenge some in the military. Crossover with civilian standards and qualifications is also important. Therefore, NATO is seeking to align education and training with international educational standards, such as the Bologna Accords in Europe,[7] which ensures qualifications are recognised internationally by harmonising educational goals and standards and by establishing a common approach to quality assurance.

NATO has also created an informal clearing house to better cope with the "Defence Education Enhancement Programme" (DEEP) for partner nations.[8] Whilst responsibility for CDE would remain centered on each nation singularly, a new partnership is envisaged by which key aspects of education and training, such as gender and civil-military cooperation, could be set at the Alliance level.

Specific attention should also be given to all aspects of synthetic education and training, with advanced distance learning (ADL) at the forefront. Innovation within CDE is but one avenue of development. There is also a revolution in the civilian use of education technologies that CDE needs to exploit. At the very least a better understanding is needed of just what civilian concepts, approaches, and technologies exist and how to exploit them. To that end, the United States has undertaken an Advanced Education Research Initiative to tap into the civilian education revolution that builds on the Joint Staff's Review of Joint Education in support of the National Defense University's NDU 2020 reform program.[9] The key finding is that technology and modularity go hand-in-hand.

Equally, given the exponential nature of technology change CDE should avoid "fad technology." A recent report by *The Economist* noted that,

> *The idea that technology can revolutionise education is not new. In the 20th century almost every new invention was supposed to have big implications for schools. Companies promoting typewriters, moving pictures, film projectors, educational television, computers, and CD-ROMS have all promised to improve student performance. A great deal of money went into computers for education in that dot.com boom of the late*

1990s to little avail, though big claims were advanced for the difference they would make.

Equally, the article goes on to say that this is a "special moment" for IT and "adaptive learning." The devil, of course, will be in understanding the detail.[10] Therefore, CDE not only needs to better exploit the revolution in the civilian use of education technologies and the change in practice it generates. Specifically, CDE needs a better understanding of what new concepts and technologies could be bought off the shelf.

Recognition will also need to be given to that fact that increased reliance on ADL could also lead to demands for increased access to all and any source of information to service online learning. If not careful CDE would thus be reduced to a kind of defence Wikipedia—strong on opinion, uncertain on quality. Moreover, ADL cannot replace personal interaction but must rather be seen as support for it. Nor should ADL or 'e-learning' be seen as poor man's learning as investment in ADL will require a significant resource commitment. Particular emphasis will be needed to select those officers best able to exploit the new learning environment.

Exploiting emerging technologies will also demand new thinking and new structures. Indeed, emerging technologies include the creation of virtual worlds and avatars, the exploitation of mobile learning platforms and applications, massively open online courses (MOOCs), the rise of the 'flipped classroom', and the use of multimedia information to take the place of lecturers, problem-solving gaming and gamification (Serious Gaming), together with augmented-reality supported by social media and closed applications. Advances in 3D printing, wearable technology, and learner analytics/big data the "Internet of Things" also suggest the relationship between the educator and learner is changing and will continue to change.

To some extent advanced distance learning should organise itself. As information docking stations emerge a best practice debate is being generated between officers and non-commissioned officers. Sites such as *Company Commander*[11] have become an essential, if informal, part of continuous learning not least because it is also open to former officers. More formally, the Royal Air Force has created a "blended learning" model which affords the learner 40-60 hours advanced distance learning over 2 years reinforced by a 1 week residential course.

Advanced distance learning should be an essential part of future CDE as should the application of other technologies currently revolutionising civilian education.

Consequently, the balance between residential and remote courses is also likely to change. However, an essential paradox must be confronted if both technology and the information it affords the learner are to be affordably exploited. As the budgets of academies (and their like) are reduced the belief in many NATO countries that increased reliance on ADL could save money is probably in error. Instead ADL will likely generate demands for increased access to information to service online learning that will simply prove beyond reach.

A range of other measures should help to promote effective CDE. The better systematic linking of education, training, exercising, and research would help promote synergy in learning outcomes. This goal would require much closer co-operation between ACT, the Joint Analysis and Lessons-Learned Centre (JALLC), and defence academies within NATO, ACT would in effect act as both a clearing house and best practice consultancy. This would also help to foster and create indicative NATO Educational Standards that might in turn promote common educational standards at the policymaking and operational levels.

Again, the focus of CDE should be determined by the needs of the learner. However, given the very particular nature of the profession of arms there is a critical need to ensure that learning is tailored to ensure an officer always receives the requisite knowledge to succeed at the appropriate level of command. This is especially important as mission command leads to more decentralisation of command decisions. Indeed, the changing command environment of CDE also suggests a much firmer and more planned link, not just between lessons-learned and education, but between the research that ideally should inform education.

Education and training should also be seen as part of a holistic concept, with experience from other professions analyzed, assessed, and used for general betterment. For example, The Carnegie Foundation undertook a 2008 study for the Advancement of Teaching, within the framework of their "Preparation for the Professions" programme, which looked into the educational practice of other professions.[12] A similar study could inform future CDE. Indeed, although CDE is by definition far broader than the Carnegie Foundation study, such an analysis could be of use in identifying education and training tasks within the profession.

Rigour in CDE would be critical. Demonstrating and measuring success credibly and honestly should also be vital if CDE is to escape the tendency of defence education to place the importance of avoiding failure above generating success. Indeed, to a large extent the success of CDE would be linked to the willingness of systems to allow

failure—both of the learner and the educator. In too many CDE institutions the educators teach what they know rather than what is needed, and officers who work hard and those that do not receive the same qualifications in the end. This tends to reinforce the belief that courses are rubber-stamping exercises to legitimate promotion rather than an exercise in necessary learning and improving critical thinking. This culture of permissiveness helps to make education and training slaves of bureaucracies with performance all too often measured against known but out-dated solutions. In fact the opposite is needed: education and training must promote initiative, creativity, innovation, and risk-taking with CDE built on a culture that can cope with that aim.

None of the change implicit in CDE would be easy. A critical challenge for defence educators will be posed by an essential question that is yet to be addressed: are we doing the right thing? This is not an easy question to answer. Across the Alliance output-based teaching is being replaced by competence-based individual learning. That suggests junior rather than senior officers should construct competence profiles, education and training systems to better accommodate individual education and career preferences. Moreover, in measuring and evaluating 'success' too often senior officers believe that re-producing themselves is the benchmark. Much more rigorous internal and external on-going validation would be needed to demonstrate both the relevance of education and training and the progress (or otherwise) of the learner.

At the top end of the command chain, the nature of complex coalitions, complex force generation, and command and control suggests CDE should be focused on an elite 25 percent of officers who are likely to achieve high command. NATO must move to create bespoke CDE courses, possibly using the NATO Defence College in Rome as the locus. Given that contemporary coalitions will likely be comprised of both military and non-military actors these elites will also need to be educated in a multinational and multidisciplinary framework

Innovative national approaches to PME should be closely evaluated for wider application. A case in point is the Danish advanced distance learning initiative. The Danish armed forces are embarking on an interesting effort to square the forces, resources, and CDE circle through the use of technology, advanced distance learning, and a determined focus on innovation. Given the changing defence 'market' the Danes no longer assume life-long military careers. Indeed, the requirement to cut 15 percent of the defence budget has forced the armed forces to make choices between capabilities and capacities that have led in turn to a 30 percent cut in administration, personnel, and education. Similarly, long residential courses can no longer be afford-

ed which is promoting the extensive use of ADL as part of a short, sharp but regular education experience that places the onus of incentive on the individual. Electives and modules of choice shape both education and career paths. For the Danes, CDE is no longer seen as a one-size fits all model. Interestingly the Danes have found that the use of ADL makes face-to-face time between learner and educator both more valuable and more tailored as much of the foundational knowledge has already been generated by the learner. As a consequence of the pressure of learning generated by this approach and the need for self-motivation on the part of the learner the elite become self-selecting.

This approach to self-selection which has been reinforced by a new partnership with civilian universities has in turn enabled the Danes to release more educational resources into CDE. Critically, CDE is seen as just one system in a system of systems with educational skills regarded as an essential element in the differentiation between individuals with non-performers required to leave. Courses are accredited by civilian universities partly to ensure that those who fail can make the transition to life outside the services.

Finally, the impact of technology on education concepts, programmes and structures would need to be fully understood. Indeed, given technology and modularity go hand-in-hand, a much greater use of electives in programme and course design will be needed. However, that in turn demands that the relationship between technology, tailored and blended learning, and programmes needs to be better understood by CDE practitioners. The United States has undertaken an Advanced Education Research Initiative to tap into the civilian revolution which builds on the Joint Staff's Review of Joint Education in support of NDU 2020 which might be adaptable to NATO-wide CDE.

The Critical Role of Academies

Promoting shared best practice will be critical to CDE but any attempt by the Alliance to impose a precise template from above across the education and training domain will likely fail as such an effort is unlikely to overcome cultural, political, and ethical barriers. Therefore, the role of defence and security academies (and their equivalents) will be particularly important, particularly as centres of experimentation and innovation. However, academies must be flexible enough to reach out to all those partners vital to the defence of the Alliance and national security across the conflict spectrum—hence CDE. As such the future defence and security academy

will become a platform for career learning, a conduit for the movement of knowledge across the education and training continuum, and the focus for preparing officers for working in multinational frameworks such as coalitions. In support of those goals, partnerships with wider civilian academia will become ever more the norm, both as talent pools and as portals to applied and applicable research.

Defence and security academies will also form the physical base and act as the guardian of understanding the current and future character of conflict. As such explaining and understanding complexity would be the essential CDE challenge in an age when conflict will be conventional and unconventional, hybrid and classic.

Given that mission the pressing need today is to draw the knowledge and skills gained in Afghanistan and transfer them to both the classroom and exercises in a way that challenges rather than reinforces convention. To that end, junior officers should be given a much broader perspective than in the past, be it via surveys of the strategic environment, analyzing possible horizons, or exposing them to other concepts and security practitioners.

A specific challenge facing all academies concerns the need to ensure efficiency in the use of information technology in education and training underpinned by a stable and experienced academic community that can support the exponential growth in the demand for information the use of technology generates. That means educating the learner for information selection rather than information collection. This approach would inevitably lead to new learning methods, such as blogs, video streams, remote maintenance, and video conferencing, in which the educator becomes the critical moderator.

Peer-to-peer education would also become more important not least because the older education/trainer will be far less adept at the use of technology than the younger learner. In the short-term the use of information technology in education and training will likely prove more expensive and will only become cheaper over the longer-term if used on a large scale, which again suggests a role for the Alliance. To realise the efficient and effective exploitation of such technology, the need for external support would also be important.

Knowledge: The Real Spearhead

ACT should lead in the creation of a CDE vision that could establish the benchmark for proving relevance, thus ensuring education and training are firmly embedded in NATO's Smart Defence[13] and the Connected Forces Initiative.[14]

Furthermore, armed forces need to be clear that higher education is a profession in its own right that has its own exacting standards that can be used to ensure CDE standards and qualifications. Specifically, military leaderships must grasp a contemporary strategic reality: that education affords armed forces far more than simply qualifications. CDE would generate an all-important talent pool for the profession of arms.

Furthermore, to fully exploit the military-education partnership (the most important such partnership) the military needs to become more open than it has ever been before to the educated mind, just as educators and educating must be far more open to the military. This is because knowledge will remain the real spearhead to be generated, deployed, used, and assessed. Indeed, in this complex world knowledge will be a key to comparative advantage in hyper-competitiveness for any institution. And given the very 'real' nature of hyper-competition in the profession of arms comparative advantage must be AN end in and of itself towards which CDE and its supporting institutions must be organized.

False choices or recognising only as much knowledge as can be afforded in the short-term must be assiduously and consciously avoided even though affordability is the driving mantra of this age. Therefore, knowledge must be BOTH broad and deep, just as education must be both wide and profound informing the warfighter and security actor alike. That does not mean that specialisations will be lost. Far from it, in a properly organised CDE structure itself established on agile academies able and open to the exploitation of both technologies, partnerships and above all new thinking, specialisation would become the organising principle for a realm of all the talents. Indeed, in a leaner-centric environment tailoring CDE to specific career choices would create both broad and deep learning outcomes.

Indeed, if there is one concept that should inform CDE in this Alliance in this century it is not inputs or outputs, but education and training outcomes. By establishing that concept early CDE would become the hitherto unexploited strategic enabler underpinning leadership at all levels of command and in all defence and security domains. Outcomes would need to be invested in and tough choices made as strategy and decision–making never take place in isolation from resources. Central to an outcome-driven concept of CDE would be the rapid acquisition and reacquisition by the learner of that most precious of military commodities—judgement.

Comprehensive Defence Education: Making Smart Defence Smarter

Comprehensive defence education, Smart Defence, and the Connected Forces Initiative must be firmly established. This is because most NATO allies are facing declining defence budgets, grappling with technology change and confronting endemic short-termism and academic parochialism in programming and curricula. It is therefore vital to re-align such programmes with the core mission: to support and enable the joint warfighter.

Indeed, the Alliance is at one of those knuckle points, a tipping point if you will, when tough choices have to be made. With the drawdown of coalition forces in Afghanistan and the shift from campaigning to contingency, the Alliance will, a) lose the operational input that informs much of defence education; and b) need to systematically preserve the corporate memory gained over a decade of campaigning.

Therefore, in this new strategic age which the Alliance is about to enter in which the maintenance of a new global balance of power will be the key to stability and security the collective credibility of the Atlantic Alliance as security actors will rest to a significant extent on knowledge—both as a strategic enabler and as a central element in ever-more decentralised mission command.

Given the centrality of best practice it might first be useful to create a matrix at Allied Command Transformation highlighting the different policies, institutions, programmes, and curricula NATO nations have adopted. This would help NATO nations better understand what if any consolidations of both institutions and programmes could be made.

To render such change ownership of the CDE project will be needed at the very highest level both in NATO and the nations. Therefore, to promote the revolution in strategy, defence, and security education that is needed, NATO should convene a high-level working group to consider the future of CDE that reports back to both the Secretary-General and all Alliance member nations.

NATO defence education is not just an ancillary to the Alliance's strategic mission but central to it as NATO's people and their knowledge will remain a critical enabler of success in a complex and increasingly dangerous challenge. If the Alliance is to rise to the challenges that doubtless lie ahead then how people think will be critical to how people act—from the highest level to the lowest. After all, as the former President of Harvard, Derek Bok once said, "If you think education is expensive, try ignorance."[15]

Notes

[1] James Boswell, *The Life of Johnson*, Abridged (Digireads.com Publishing, 2010), 80.

[2] This chapter reflects the reports written by the author on two May 2013 conferences. The first was held at Wilton Park, England, entitled, *Connected Forces, Connected Minds: Transformation and Professional Military Education*. The second was the Oslo 42nd Conference of Commandants of NATO defence academies which considered *Education in the Post-Afghanistan Era*.

[3] Andrew Gordon, *The Rules of the Game: Jutland and British Naval Command* (London: John Murray, 1996), 526.

[4] R. O'Rourke, *Defense Transformation: Background and Oversight Issues for Congress* (Washington, DC: Congressional Research Service, November 11, 2006), ii.

[5] Julian Lindley-French, *Wilton Park Report "Connected Forces, Connected Minds: Transformation and Professional Military Education"*, May 2013, 6. Report in authors possession.

[6] Ibid.

[7] The Bologna Accords led to the creation of the European Higher Education Area designed to promote comparability in the standard and quality of higher education qualifications across Europe. The Accords were agreed by twenty-nine education ministers from both European Union and partner countries at the December 1999 Union summit in Bologna.

[8] The Defence Education Enhancement Programme (DEEP) connects senior educators from NATO nations with their counterparts from partner countries with the objective of enhancing educational curricula and learning methods. The first clearing house took place in September 2012 aimed at sharing best practice. See "Supporting defence education in partner countries," *NATO*, Homepage, available at <www.nato.int/cps/en/natolive/news_90086.htm>.

[9] This review is being undertaken for the Chairman of the Joint Chiefs of Staff, General Martin Dempsey. According to George J. Flynn "The J7 is responsible for developing the policies governing officer and enlisted joint professional military education (JPME) and for National Defense University, the Chairman's University. Our joint education system will promote the knowledge, skills, attributes, and behaviors of the joint force that define our profession of arms, keeping leadership as the foundation. It will produce leaders at every echelon who possess the ability to think strategically, critically, and jointly". See George J. Flynn, "Joint Force Development Vision: Adapting to New and Future Realities," *Joint Force Quarterly* 64 (1st Quarter 2012), 149.

[10] "Education Technology: Catching on at last," *The Economist*, June 29th, 2013, 22.

[11] *Company Commander*¸ Homepage, available at <www.companycommander.com>.

[12] The Carnegie Foundation Study is part of a long-term programme which is engaged in a deep and long-term exploration of the application of the tenets, tools, and methods of improvement research to develop a science of performance improvement in education. See "Preparation for the Professions Program," *Carnegie Foundation for the Advancement of Teaching*, available at <www.carnegiefoundation.org/previous-work/professional-graduate-education>.

[13] At the 2001 Munich Security Conference NATO Secretary-General Anders Fogh Rasmussen first outlined Smart Defence. He said, "*I see three significant changes that will affect NATO in the coming years: defence cuts in Europe; the evolution of the United States defence posture; and the end of our combat operations in Afghanistan. We need to respond to these changes so that, by the end of this decade and into the next, we emerge stronger as an Alliance, not weaker. A key part of our response is what I call Smart Defence - a new way for NATO and Allies to do business. Faced with fiscal austerity, and defence budgets under pressure, this is about doing more by doing it together*". *See* "Smart Defence and Interoperability," *NATO,*

undated, available at <http://natolibguides.info/smartdefence>.

[14] According to NATO, "The main requirements of CFI [Connected Forces Initiative] are to ensure that Allies can communicate effectively, practise together, and validate and certify their ability to do so. Three fundamental and inter-related elements will be developed to address these requirements: expanded education and training, increased exercises and a better use of technology". See "The Connected Forces Initiative," *NATO*, undated, available at <www.nato.int/cps/en/SID-107090C3-88095132/natolive/topics_98527.htm>.

[15] Howard R. Greene and Matthew W. Greene, *Paying for College: The Greene's Guide to Financing Higher Education* (New York: St. Martin's Press, 2004), 203.

Chapter 15

Transforming the UK MOD: Don't Leave the People Behind

Derrick J. Neal

The need for change in any organisation is a fundamental requirement for survival. As the environment within which an organisation functions is itself changing, it is not possible for any organisation to remain static. Naturally, the tempo associated with different types of business activity may vary significantly and as such it may be possible for an organisation to make minor changes to the way it operates and remain viable for some time. However, in other high tempo businesses it may be that the failure to adapt will surface by way of organisational failure within a relatively short period of time, perhaps as short as a few months; failures within the Internet sector in the early 2000s exemplify this point.

The strange thing about the scenario outlined above is that the academic literature on change management is both well understood and accepted. Yet organisations are, by and large, not particularly good at delivering meaningful change. As noted by Beer and Nohira, some 70 percent of change initiatives fail to deliver the benefits envisaged at the outset.[1] They put forward the case for two theories that can be applied in delivering change, namely; Theory E and Theory O which will be explored more fully later in this paper.

One distinction that can be applied to organisations is the difference between the private and public sectors in the respect that in the worst case scenario if a private sector organisation fails to either recognize the need for change or fails in terms of delivering change they may well cease to exist in the future. However, in the case of public sector organisations, it can be argued that the need for the provision of the service remains, especially so when a major calamity occurs, and the most common solution is for the department concerned to be re-defined, re-structured, and a new mission statement issued. This was the case in the United Kingdom in 2001, following a poor performance in dealing with the outbreak of Foot and Mouth disease. The Ministry of Agriculture Food and Fisheries was subsequently disbanded and a new

department was formed under the banner of the Department for the Environment, Food, and Rural Affairs, with new staff at the head of the organisation, new budgets, and new responsibilities.

Of course, for most nations there exists a spectrum of public sector activities that can be delivered by a variety of operational structures that range from being fully privatised to being fully taxpayer funded. For example, a number of previously nationalised industries were opened up to the private sector in Britain under the Margaret Thatcher years with two of the most newsworthy being British Telecom and the steel industry. Others function in a mixed economy scenario with the likes of the National Health Service being maintained but accepting that a vibrant private sector for health care is also of benefit to the nation. A more recent move has seen the government stepping back from the education sector by opening up a market for the establishment of academies and open schools. Even the university sector is now looking at new structures whereby the student now studies on the basis of a loan which has to be paid back once they find employment. This approach is not dissimilar to the system in the United States and Australia but it does leave the student starting their working life with a significant debt to pay off.

Other aspects of public sector provision are unlikely to be subject to radical changes in the mode of operation. Within this context, Defence is a function that does not lend itself to being privatised. While there has been a growth in Private Military Companies in some countries, they generally tend to provide specific security functions rather than going to war on behalf of a nation. Nevertheless, even Defence is not immune from the pressures that arise from the economic health, or lack thereof, of the nation. Whilst a nation needs to feel that it has the necessary resources to protect its citizens, its assets both at home and, where appropriate, abroad, and to play its role on the international stage, it also has to cut its cloth to fit the available resources. It has long been held that during the period of the Cold War the United States applied an imposition strategy against the Soviet Union. In particular, the arms race was a strategy that the United States was always going to win as it had the larger, more technically savvy, and nuanced economic base behind it to be able to afford the drive for military excellence, in addition to a push into the space race. The Soviet Union simply lacked the economic wealth to keep up and the end was in some ways rather predictable. Of course this raises a similar question today with the United States recognising that it cannot continue to fund its national security apparatus to the levels it has in the past, and that this must be done against the backdrop of a rising

China becoming an economic superpower in its own right that is investing heavily in Defence science and technology.

The United Kingdom has been punching above its weight on the international stage for several decades,[2] however, the fiscal problems that are fully acknowledged need to be reflected in tough decisions in terms of military aspirations. Change is not an option any longer, it is a necessity. However, the scale of the change is so significant that it is not sufficient to simply say that a cultural change (or paradigm shift) is required. What is actually needed is a change in the mindset within the organisation. A change in mindset requires the embracing of a very different set of questions that need to be asked of itself; the organization needs to challenge its basic heuristics and needs to take a fresh look at how it goes about finding answers. In order to explore this it is helpful to view the issue against the backdrop of what theory has to say about delivering transformational change within a large and complex organisation.

The Theory of Transformational Change

Much has been written about change management in general and there are also different lenses that can be used to explore how an organisation goes about delivering change. Most change is actually driven by changes in the external environment within which the organisation operates. Typically this can come from one or more of the following factors (this list is simply indicative and by no means comprehensive):

- Technology
- Changes in the law (either national or international)
- Actions of competitors
- Economy within which the organisation operates
- Politics of the day
- Regulation/deregulation
- Societal values
- Demands from the customer base
- Views of shareholders.

The first step is recognising that a need for change exists, and the second step is doing something about it in such a way as to either mitigate the threat or take advantage of the opportunity. The first step is usually linked to an organisation failing to deliver against key performance indicators that may be identified within the organisation or

drawn to their attention by key stakeholders. Equally, the need for change may be obvious as a result of changes in legislation, technology, government policy, or indeed the actions of a competitor to name but a few of the possible external factors. Numerous approaches exist in dealing with the second step and are reflected in a swathe of Models and techniques. Change Models can be characterised by the number of steps involved in the process. Several examples of three-step Models exist includes Lewin's unfreeze, change, and re-freeze[3]; Tichy and Devanna's awakening, mobilizing, and reinforcing[4]; Nadler and Tushman's energizing, envisioning, and enabling[5]; and Egan's diagnosis, future vision, and strategy.[6] In addition, other researchers have proposed multi-step Models such as Kanter's 10 Commandments,[7] the Beer and associates 6 Steps, and the oft-quoted Kotter 8-step Model.[8] However, dynamic checklists should not be seen as a 'holy grail'—it does not matter how comprehensive the list is if management are unable to turn each element into a reality through an effective process.

The scale of the change also needs consideration; this can range from small to large or from simple to complex. It is important to recognise that change is being delivered within the internal context of the organisation in addition to an external environment that also ranges from highly complex to simple and from stable to highly unstable. Whilst it is not the case that small changes are simple or that large cases are necessarily complex it is, however, important to make the distinction between incremental and transformational change.

Incremental change over time equates to evolutionary change; the organisation will have a sense of direction and makes a series of small-scale changes that keep it in step with its environment (shown as Phase 1 in Figure 1). Through a number of steps over a period of time the culture of the organisation may also evolve, however, this may be as a consequence of the change programme and not necessarily something that was identified as a *sine qua non* at the outset. Structured incremental change can be a major task and can involve some highly complex issues but if carried out well the organisation can derive major benefits. This approach is consistent with the concept of the Learning Organisation as depicted by Senge and can result in an organisation that is sufficiently flexible and adaptable to mirror the changing needs of the environment within which it operates.[9] However, this is not the major prize within a change management context. The key benefit is that stakeholders, in particular the staff, move to a position where they no longer see change as a threat but instead they embrace it as a challenge and opportunity.

The notion of transformational change is somewhat different and is more akin to revolution as opposed to evolution. The need for transformational change can arise

from two key sources: First, if an organisation fails to deliver incremental change successfully it may find itself in strategic drift as defined by Johnson and Scholes[10] and represented in Figure 1. A prime cause for an organisation to find itself in this state is through having become complacent and in such circumstances it is commonly found that management really struggle to understand what is going wrong. This often leads to failed change initiatives and the period of flux (Phase 2) indicated in the figure. If the situation is not resolved the organisation may find itself having to confront the prospect of transformational change, shown as Phase 3 in Figure 1. This means that a change in the organisation's culture is necessary and, as indicated earlier, failure to achieve this can result in demise (Phase 4) for a private sector organisation or a re-birth for a public sector organisation.

The second source, and cause of strategic drift, is when a major change or event occurs in the environment that may or may not have been predictable. Simple examples include scientific breakthroughs, changes in industry structure such as regulation and deregulation, or unexpected acts, such as the September 11, 2001 events in New York, Washington, and Pennsylvania.

Figure 1. The Strategic Drift concept[11]
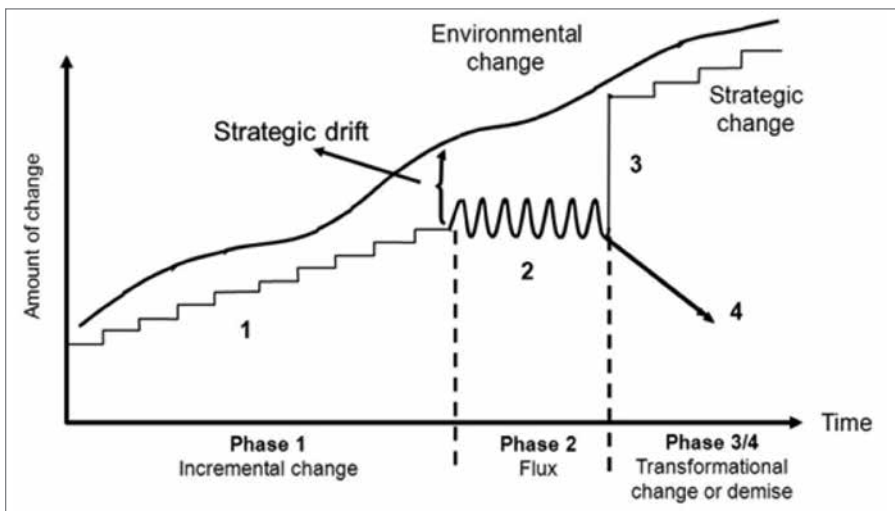
What do we mean by Transformation?

Webster's dictionary defines transformation as "an act, process, or instance of transforming or being transformed." To transform is to "change completely or essentially in condition or structure; to change the outward form or appearance of; to change in character or condition." Within the world of management there is a tendency to focus on specific words and to use them as a basis of giving gravitas to the argument being presented. For quite some time this has been the case in the use of the word 'strategy', and more recently within the subject of change management, the phrase, 'transformational change' is used all too frequently. The problem is that within the context of change management the term 'transformational' connotes the fact that such change needs to recognise that both the scale and nature of the change are such that changes in the organisation's culture are a requirement, not an option. It is this dimension of transformational change that increases the complexity and challenge in delivering the desired outputs.

Changing the culture of an organisation is something that takes time, resources, and the right leadership skill set. To some extent the private sector, theoretically, has a slight advantage as it has scope to replace people throughout the organisation ranging from directors (or indeed a whole board) through to operators on the shop floor. The weakening of unions and changes in the law over the past 20 years means that such actions, if managed sensibly, are feasible and are unlikely to result in national strikes or walkouts. Even with this degree of flexibility, industry gets change management wrong more times than right. However, the public sector has far less flexibility in this regard as there is a much smaller open market to draw from. The sheer scale of most public sector organisations is such that it is difficult to achieve a critical mass in order to drive change management forward. The MOD has to operate in a particularly restrictive situation as will be discussed in detail later in the paper.

Other researchers have considered the distinction between transformational and incremental change and have proposed a range of other terms to describe the differences. Levy and Merry make the distinction that if the change does not change the organisation's mission, purpose or reason for existence then this is a 'first order change', however, if the above is not true then one is dealing with 'second order change' or transformational change.[12] Rainey highlights that transformational change requires a more holistic approach that is strategic in nature.[13] It will also require the organisation to change several key dimensions that define how the organisation operates including its culture. Fletcher argues that transformation involves changing an organisation's core

components and functions in order for that organisation to be viable enough to accomplish its mission and to continue to exist properly in its environment.[14]

As part of their research Levy and Merry conducted a review of the academic literature, as shown in Table 1, pertaining to definitions of 'first order' and 'second order' change and whilst the actual words used to describe each situation may vary the uniformity of the line of development is strikingly similar and leads them to comment that the distinction of second-order (or transformational) change is that it is, "a multidimensional, multi-level, qualitative, discontinuous, radical organisational change involving a paradigmatic shift."[15]

Table 1. A selection of definitions of first order (incremental) and second order (transformational) change[1]

Author	First order change (reformation)	Second order change (transformation)
Management theory. Lindblom[2]	Branch change: "...successive limited comparisons that continually build out of the current situation, step-by-step and small by degrees."	Root change: "A rational comprehensive approach starting from fundamentals anew each time, building on the past only as experience is embodied in a theory and always prepared to start from the ground up."
Management theory. Vickers[3]	Executive change: gives effect to policies by maintaining the course of affairs in line with governing relations, norms, and standards."	Policymaking change: "Forming the governing relations which assume, express, and create a whole new system of values."
Creative thinking. De Bono[4]	Vertical change ". . .seeks to establish continuity, one thing must follow directly from another."	Lateral change "works with the hope that a better pattern can be arrived at by restructuring; it seeks to introduce discontinuity."
Planned change. Greiner[5]	Evolutionary change: "The modest adjustments necessary for maintaining growth under the same overall pattern of management."	Revolutionary change: "The serious upheavals and abandonment of past management practices involving finding a new set of organisational practices that will become the basis for managing the next period of evolutionary growth."
Planned change. Grabow and Heskin[6]	Rational change ". . .does not change its internal structure at all because it does not question the fundamental assumptions upon which it is based."	Radical change ". . .is a paradigm shift and system change."
Change theory. Gerlach and Hines[7]	Developmental change ". . .is a change within an ongoing social system adding to it or improving it rather than replacing some of its key elements."	Revolutionary change ". . .is a change that replaces existing goals with an entirely different set of goals steering the system in a very different direction."

Author	First order change (reformation)	Second order change (transformation)
Organisation theory. Skibbins[8]	Horneostasis is the "...internal and external forces are nearly in equilibrium. The managers operate with limited short-range goals and tend to run such systems pretty much as they are."	Radical change is the "...high spread, large-scale processes that occur within a single organisation like caterpillars turn into butterflies, the organisation retains its identity yet it transformed into something new."
Management. Sheldon[9]	Normal change: "The fit between the organisation and its environment and among its components is so rarely perfect, so ... organisations are constantly tinkering with one dimension or another."	Paradigm change "...involves several or all dimensions at once ... radical change in the world and world view."
Management theory. Ramaprasad[10]	Minor change is "...merely improving the efficiency of the current operations."	Revolutionary change "...redefines the system. The redefinition may be entirely conceptual, structural, or processual, or a combination of the three."

[1] Amir Levy and Uri Merry, *Organisational Transformation: Approaches, Strategies, Theories* (New York: Praeger Publishers, 1986), 6-8.

[2] Charles Lindblom, "The Science of Muddling Through," *Public Administration Review 19,* no. 2 (1959), *79*.

[3] Geoffrey Vickers, *The Art of Judgment* (New York: Basic Books, 1965), 27.

[4] Edward De Bono, *Lateral thinking for management* (New York: American Management Association, 1971), 4; 9-10.

[5] Larry Greiner, "Evolution and revolution as organizations grow," *Harvard Business Review*, 50, no. 4 (1972), 40.

[6] Stephen Grabow and Allen Heskin, "Foundations for a Radical Concept of Planning," *Journal of the American Institute of Planners* 392 (March 1973), 476.

[7] Luther Gerlach and Virginia Hines, *The Dynamics of Change in America* (Minneapolis: University of Mininesota Press, 1973), 8.

[8] Gerald Skibbins, *Organization Evolution* (New York: Amacon, 1974), 4-7.

[9] Alan Sheldon, "Organizational Paradigms: A Theory of Organizational Change," *Organizational Dynamics* 8, iss. 3 (Winter 1980), 64.

[10] Arkalgud Ramaprasad, "Revolutionary Change and Strategic Management," *Behavioural Science* 27, iss. 4 (1982), 387-388.

Although most of the change management Models tend to focus on activities they also imply that change is a process and that a key element is in getting the people involved to sign up to the need for change and to embrace change as an opportunity rather than a threat. An important aspect of this is the need to recognise that both individuals and groups of people require time to make the adjustments associated with the change. This may be relatively easy to manage where minor (incremental) change

is involved but becomes critical when transformational change is the order of the day. The emotional journey that has to be completed is often described as transition and leads to the notion that in order to achieve the benefits expected from the change the following formula needs to be recognised and addressed.

Managing Change = Change Management + Transition Management

According to Bridges all too often organisations operate with a Transition deficit as most, if not all, activity is directed to the Change Management aspect.[16] This can be seen as a natural human response given that the application of Change Management tools and techniques is something that most managers believe they are empowered to deliver. The activities tend to be visible and metrics can be applied to measure progress along the journey. However, it is argued that they are only looking at the minor part of the issue and until they are able to recognise the signs of staff under stress and devise ways and means to help individuals and groups to make sense of the change and to come to terms with how they feel about the things they have to let go and to experiment with the new ways of doing things they run the risk of failure. The Transition Model, shown in Figure 2, devised by Bridges highlights the fact that individuals make the journey from the left hand side to the right hand side of the figure at different rates and take different pathways through the transition process. For example, an individual (or group or department) may well move into the Neutral zone and unless they receive the right type and level of support as and when needed they may well resort to their comfort zone and not be accepting of the new ways of doing things.

Figure 2. The Three Phases of Transition[17]
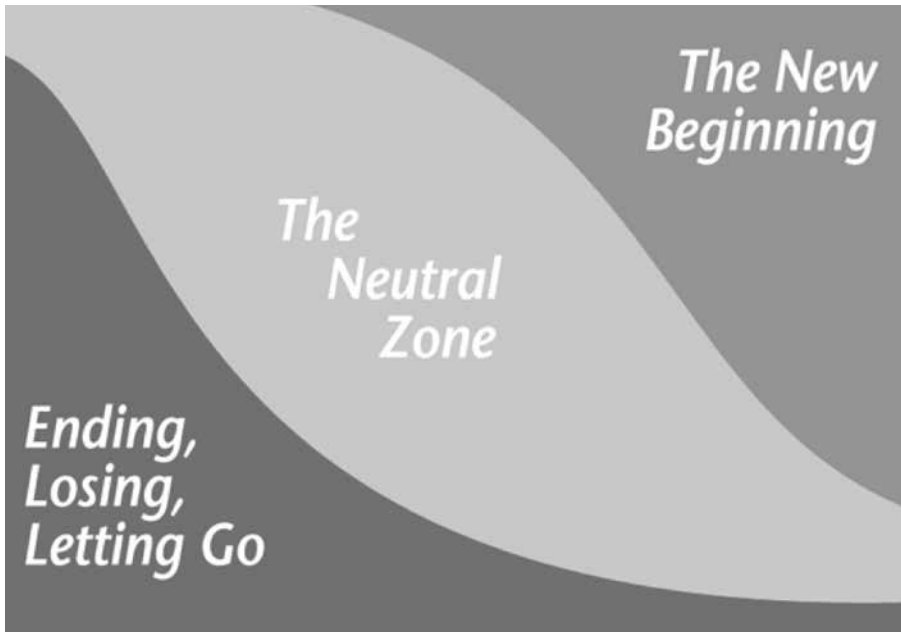
This line of argument leads back to the work of Beer and Nohira and their notion that there are two key approaches to change, namely: Theory E and Theory O which have fundamentally different characteristics.[18] Essentially, Theory E and Theory O differences can be characterised as given in Table 2. The key point to note about this is that there are consequences if either approach is adopted exclusively and care has to be taken in combining elements from each in some form of hybrid approach. In particular this impacts on the communications strategies as it becomes easy to end up sending out mixed messages. These points need to be noted as this paper develops and explores the approach(es) being adopted by the MOD.

Table 2. A comparison of Change Dimensions under Theory E and Theory O[1]

Dimensions of Change	Theory E	Theory O
Goals	Maximise shareholder value	Develop organisational capabilities
Leadership	Manage from the top down	Encourage participation from the bottom up
Focus	Emphasise structure and systems	Build up corporate culture; employees' behaviour and attitudes
Process	Plan and establish programmes	Experiment and evolve

Dimensions of Change	Theory E	Theory O
Reward systems	Motivate through financial incentives	Motivate through commitment – use pay as fair exchange
Use of consultants	Consultants analyse problems and shape solutions	Consultants support management in shaping their own solutions

[1] Michael Beer and Nitin Nohira, "Cracking the code of change," *Harvard Business Review* (May-June 2000), 137.

The Case for the UK MOD

BACKGROUND

A major change to the strategic environment took place in 1989 with the ending of the Cold War. The decades of functioning within this climate had resulted in clear doctrine to deal with the threat from the Soviet Union, and this was reflected in the approaches to training and the acquisition of equipment well suited to the forecasted nature of any future conflict. After the Cold War, the MOD instigated a number of change initiatives, but in essence they really did not come to grips with the true nature of the changed environment. It was only in 1998 that a true Strategic Defence Review (SDR) was undertaken. Unfortunately, had the outputs of this review been addressed effectively the MOD would not have been faced with the scale of problems that it found itself grappling with in 2010. From 1989 to 1998 the MOD was trying to close the Strategic Drift gap, as highlighted in Figure 1. The result from poor implementation of the SDR combined with the fact that senior people did not address many of the tough decisions meant that the MOD was almost doomed to stumble from one problem to another. For example, a tough decision on the future of the Eurofighter Typhoon project was ducked as a result of significant political pressure to keep investing on the basis of jobs in the North East of England. In reality this aircraft was designed during the Cold War period for air to air combat against Soviet MiGs. Since the 1998 SDR the MOD has refined some of its thinking as a result of the changing nature of threats and the move away from State-on-State warfare to one of urban battlefronts against non-state enemies that operate easily amidst the complexity of the human domain within an operational theatre. However, with the most recent concerns over Iran and North Korea, the pendulum may well be swinging back towards high-technology, high-risk, state-based conflict.

In some ways the real driver for the MOD to change had nothing to do with an enemy, or a change in technology, but rather the fact that the United Kingdom simply

cannot afford to continue funding an inefficient organisation that was over-staffed and poor at conducting business with a very astute Defence industry. As a result of numerous failed attempts to deliver meaningful change, the MOD found itself in a situation where root and branch (transformational change) was required. The SDSR process in 2010 certainly took some tough (and unpopular) decisions but in truth this was more of a financial review process. A key aim of SDSR was to bring the Defence budget into balance with a particular emphasis on the Equipment Procurement Programme (EPP), which was unaffordable and presented a liability of £38B over a 10-year period.[19]

DEFENCE REFORM

The delivery of Defence reform through the implementation of the Levene report[20] is clearly within the scope of transformational change as it will have a direct impact on all aspects of how the MOD conducts its business. The new Defence Operating Model will need to function in an environment that involves a significant reduction in staff numbers within the MOD. For example, the Army is downsizing from in excess of 100,000 down to 82,000 (and may well have to reduce further in the future). To balance this reduction, the Regular Reserves and Volunteer Reserves combined will need to increase significantly to about 30,000 (if this can be achieved). Whilst the total number of regular serving personnel plus reserves will, in theory, result in a total force in excess of 100,000 the consequences of having 27 percent of available trained soldiers from a reserve organisation will carry with it a number of additional challenges. In particular, and in light of the current (and foreseeable future) economic conditions, an employer may well lose the services of a Volunteer Reserve staff member for a period of one year in every five years. This is on the basis that said individuals will need not only to train on a regular basis they will also need to undergo Pre-deployment Training, followed by Deployment, and a subsequent recovery period.

The MOD Head Office will become smaller and will be responsible for defining and driving the planning processes for Defence as a whole. The Defence Board will also be smaller and charged with being more strategic and prepared to take tough decisions to ensure that the MOD operates within its allocated budget.

The Civil Service side of the MOD will see a reduction in staffing levels of the order of 25 percent which will be challenging when at the very same time the remainder of the organisation has to grapple with new processes and procedures. This is rather

akin to servicing an aircraft engine whilst in flight. The establishment of a new Joint Forces Command intends to ensure that pan-Command capabilities are effectively managed and also have an important role to ensure that the Front Line Command (FLC) and Top Level Budget (TLB) holder organisations produce plans that are coherent across the MOD and are in accordance with delivering the Strategy for Defence[21]which will emanate from the Head Office. As if all of the above is not enough to swallow, the Chiefs of Service are also no longer part of the top level Defence Board but instead they now have an allocated budget for their Command and a degree of flexibility as to how they propose to deliver and manage the capabilities that are required by the MOD in order to pursue its objectives. However, in addition to getting the money they will also now be held to account by the Permanent Under Secretary (PUS) for the delivery of the capabilities outlined in their respective Command plans.

The new operating Model, as shown in Figure 3, represents a fundamental change in the way the MOD will conduct its business, however, in addition to the changes in structure and processes the real challenge lies in the areas of attitudes and behaviours. The relationships between the various elements of the MOD have changed significantly and only time will tell as to whether the elements in the Model behave in ways that are for the benefit of the organisation as a whole or whether they will become more single service focussed. Clearly, the depicted Model provides far more scope for stovepipe thinking and activities and should such an approach develop then it is likely that it will only serve to reinforce bad behaviours. This situation may well be exacerbated by the fact that each of the Commands will be fighting for their share of an increasingly limited budget. Of course one of the arguments to ameliorate this predicament is that by working together for the benefit of Defence there should be a greater chance of maximising the delivery of Defence capabilities for the given budget. However, the cynic will argue that each service will fight their corner at the expense of the other Commands and potentially at the expense of the MOD and the defence of the United Kingdom.

Figure 3. The new UK MOD Defence Operating Model[22]
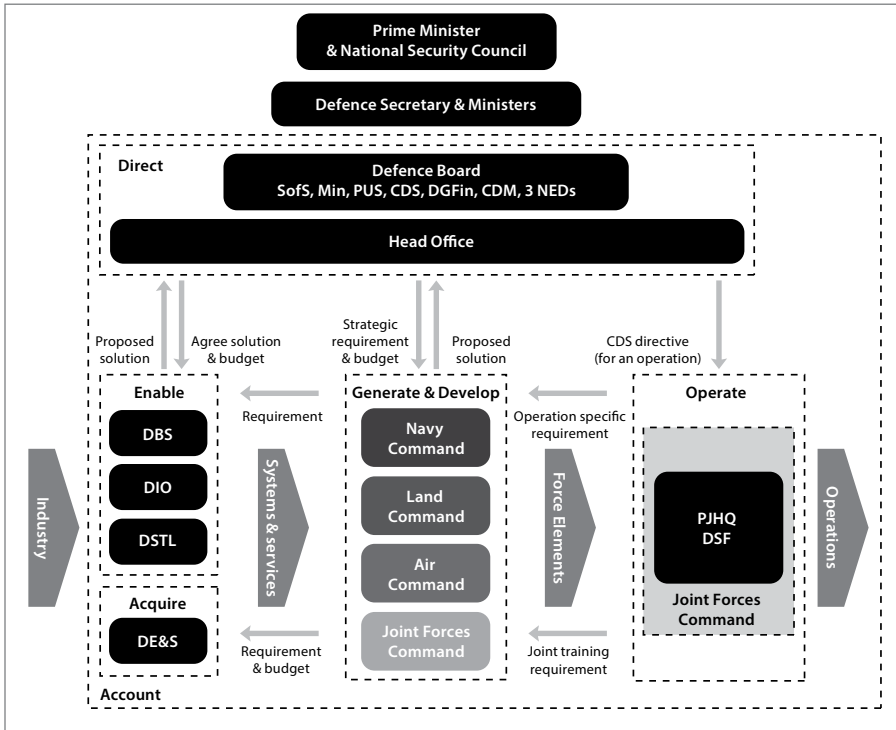
Key Challenges for the MOD in delivering transformational change

A number of important factors need to be considered if the MOD is to be successful in delivering this major reform to the way it conducts its business. The first of the factors has already been achieved, namely, the recognition that a problem exists. As highlighted earlier, the MOD had worked itself into a situation where through a number of factors, including a conspiracy of optimism, it had embarked on an EPP that was simply unsustainable. This problem was compounded by a lack of strong leadership which failed to address the tough questions and take the tough decision such as terminating unaffordable programmes. In addition to this there was weak cost estimating and forecasting of capability development at the outset, thus the MOD embarked on projects and programmes that were not soundly budgeted, and then to make matters worse, they entered into contracts that were not negotiated

Bernard Gray's report highlighted many of these aspects,[23] and the subsequent study by Levene crystallised this into the new Defence Operating Model.[24] A key element within this aspect of change was the intervention of the new Secretary of State

for Defence, Mr Philip A. Hammond, who brought a 'hard headed' financial approach to the SDSR in 2010 and made decisions that had a direct impact on the Defence capabilities that the United Kingdom could field in the short- and medium-terms. It is clear that in moving the MOD forward, financial-based assessments is front and centre of the key drivers to decision-making and this has been reinforced by the decision the appoint a financially-savvy individual to the post of PUS, and to impose a Hold to Account (H2A) process that will involve all of the Chiefs of Service (and heads of TLBs) accounting for their activities and performance on a three-monthly basis directly to the PUS. Therefore, having identified the existence of a 'real problem' and having taken a number of tough financial decisions the MOD is now left with the challenge of delivering the organisational reform proposed by Levene.[25]

The key challenges for the MOD are not in the areas of new structures (these have been defined) or indeed the processes that need to be followed (these have been issued by the re-structured HO), but rather the behaviours of the staff responsible for the implementation. Part of the challenge to be addressed concerns the realistic approach to timescales. Culturally the MOD, and particularly the military, expects to operate at a high-tempo where three years is seen as a long time. It also happens to be the normal cycle time in-post for an officer. And any officer with expectations of promotion wants to be seen to have made a difference during their time in a post. This aspect is highlighted in the approach to the creation of the new structures, for example Levene reported in mid-2011 that the expectation was that the new structures would be in place with an Initial Operating Capability (IOC) by April 2012 and a Full Operating Capability (FOC) by April 2013. It should be noted that many of the staff that were to fulfil tasks in the FLCs were originally in the HO and not moved to the Commands until late in the piece. In the meantime a voluntary redundancy programme was in full swing and the end result has been that many of the important posts in the Commands are either gapped (empty) or have had to be filled by staff ill-equipped to perform the functions. Hence, a key challenge is the provision of Suitably Qualified and Experience Personnel (SQEP) in the right positions to perform the necessary tasks. This situation is compounded by the fact that the MOD does not have a grasp on the issue of Information/Knowledge Management and runs the risk of the law of unintended consequences in terms of the loss of knowledge through staff leaving via the voluntary early retirement (VERs) scheme.

Given that the structures and processes have been developed rapidly there is a sense of unease on the part of individuals about their ability to perform the required

functions and operations which results in staff being reluctant to let go of the old way of doing things or if they have let go they feel very uneasy in the neutral zone in terms of Bridges' Transition Model.[26] One way to force this issue is to burn the bridges behind staff so that they cannot retreat to safe ground. Whilst this approach has some logic, it only works when the organisation provides a safety net for those in the neutral zone such that they have the support they need to continue moving forward. Failure to provide this simply exacerbates the stress and unease felt by staff and in many cases becomes the final straw which results in them leaving the organisation.

This leads to the next problem area, namely the lack of skills within the realms of change leadership which is evidenced by the fact that many mid and senior leaders are not necessarily even looking for the symptoms of staff unease and as far as they are concerned everything is moving forward with a happy team of staff. Even when it is recognised that support and training need to be given to staff the solution is compounded by the fact that due to the gapping of posts there is not the capacity to free staff to attend training and development courses. Thus it becomes a Catch 22 scenario that staffs do not have the skills to be highly effective, yet they do not have the time to gain the skills.

Another challenge for staff delivering the transformation demanded is that the future state will require staff to behave in collaborative ways such that the outcome is best for Defence rather than a single service or even part of a service. However, this aspiration becomes even more challenging when it is against the backdrop of continuing reductions in resources and where the greatest cost is located in the Resource Departmental Expenditure Limit (RDEL), which is primarily the cost of staff. A continued pressure in this area is likely to result in yet further reductions in overall numbers of staff personnel which again has the potential of impacting negatively on morale and putting those remaining in the organisation under even greater pressure.

What are the solutions to the Transformation conundrum?

This is not a particularly easy question to address even when the organisation has recognised the key issues from the outset. It is akin to a lost tourist asking for directions and having explained where he was trying to get to was told by the local…'well to be sure I would not be starting from here.'

In the case of the MOD, the die has been cast, and therefore this section will approach the question from the point of view of how to make the best of the required change using the current state as the start point rather than a theoretical analysis of

what they should have done differently from the outset. The issues are not in any sort of priority order or action sequence, indeed many of the issues need to be addressed in parallel, while others are iterative.

ISSUE 1

Leadership has a key role to play in delivering the Levene reforms and this needs to be evident from the highest levels at the Defence Board down throughout the MOD. Given that the need to change behaviours was highlighted by Levene as being a Critical Success Factor in the reform it is indeed essential for leaders at all levels to be seen to embrace the new structures, systems, processes in such a way that their own group, department, Command/TLB takes decisions that are in the best interests of Defence as a whole.[27] This may well mean that they have to take 'heat' from some of their own but they need to have the confidence and will to defend tough decisions when they have been necessary. The key point here is that leadership at all levels MUST exhibit the necessary behaviours that are required for change to take place and those behaviours are not only about their approach to decision-making, but show empathy with their followers.

ISSUE 2

All too often in recent decades the military have been put under pressure from politicians to continue to perform at a level even when the demands placed upon them could be seen as unreasonable. For example, when Britain first sent troops to Afghanistan, they did not have adequate body armor, even if it was available, nor did the Snatch Landrovers have any real protection against roadside bombs. However, the 'can do' military culture has in the past been used against them on the basis that they will rise to the occasion. Now may well be a crucial time for the most senior military officers to be realistic as to what can and cannot be achieved in light of both the available resources and the state of turmoil that is likely to exist within the MOD for the next three-to-four years. It may come as a real shock to senior politicians to have the Military say 'No Sir, it is simply not possible for us to undertake that mission.' Thus the key issue identified here is the moral courage of senior military leadership to hold their ground when there is clear evidence that a request cannot be achieved. This aspect must be addressed with a degree of integrity otherwise it may fail on the basis of being a cynical refusal to support the case for more resources.

ISSUE 3

Leadership and the organisation as a whole must be realistic about the timescale necessary to deliver the transformational change. Having established realistic timescales for the various activities, they then need to take a people-centric perspective. In support of this they also need to appreciate the importance of delivering early wins and ensuring that these are communicated effectively within the organisation.

ISSUE 4

Having established timescales it is then necessary for the organisation to recognise the investment that needs to be made in staff on a number of fronts:

a. What are the key positions within the organisation that can make or break the delivery of the change? This needs to be conducted for each of the FLCs, HO and the TLBs.

b. What are the skills and competencies that are required in each of these positions?

c. Identify the individuals within the organisation best placed to fill the positions.

d. If we do not have the staff with the necessary skills either

    a. Provide training in the short-term and education for the longer-term.

    b. Acquire the skills, via consultants, as a short-term measure to give time for an internal solution, (a) above, to be put in place.

All of the above is about dealing with the key challenge of a lack of SQEP and the culture of we will find a way through due to 'can do' culture.

ISSUE 5

A fundamental aspect of any change programme is the need for clear, honest, and appropriate communication which must be achieved through a transparent two-way flow up and down the organisation. One of the potential risks with the new Defence Operating Model is that it can promote more stovepipe thinking and actions. Even if the core message being transmitted is fundamental to a particular service (e.g. the Royal Air Force) it needs to be promulgated more widely to other stakeholders. It is not evident at the present time that the communication piece is being given the strategic significance it deserves.

ISSUE 6

As highlighted by Levene, the new Defence Operating Model will only succeed if staff within the MOD adopt new ways of working, new behaviours, and attitude.[28] This will not happen simply by changing the processes and structures without recognition of the importance of how staff are led and managed. To this end it becomes critical for the MOD to define what it needs by way of behaviours going forward in order to deliver the necessary transformation and it therefore also needs to put in place performance management metrics that will reward the desired behaviours and penalise those retrenching back to the old behaviours. The MOD mantra of, *Be (a leader)—Think (Defence)—Do (it better)*, is hardly convincing as a strategy to deliver behavioural change and it can only be hoped that somewhere someone is working hard to provide the MOD with a credible way to move forward. The key point here is that these matters really should have been considered and addressed at the outset of the transformational change programme, NOT as an afterthought to the design of the new structures and processes.

Conclusions

This paper has explored the drivers of change for the United Kingdom's MOD and the ways in which they have changed over recent decades. It has focused in particular on the most recent implications of the double (and possibly triple) dip recession that has hit the British economy in recent years. The financial reality for the MOD is that it has to manage with less money for the foreseeable future and that the tough decisions that were taken in 2010 as part of the SDSR will not go away, indeed the MOD needs to brace itself for yet more budget pressure going forward.

The concept of strategic drift and the phases of strategic change helped explain why the MOD found itself in such poor shape with regard to managing its budget in 2010 and the need to take a number of very tough decisions in order to bring the EPP budget back into balance. Within the academic literature on 'first order' and 'second order' change it is clear that the Defence reform already initiated is in the realms of Transformational Change ('second order'), and consequently, the MOD needs to accept that it will have to achieve a cultural change in the department if it is to be successful. The Bridges Model was also helpful in highlighting the human dimension of change and its significance to leaders if they are to be alert to the issues of taking their staff on the necessary emotional journey associated with the transition process.

Although the Levene report provided something of a blueprint of the issues that need to be addressed by the MOD it, quite correctly, did not try to set out how the

MOD should go about delivering the change. Had it tried to do so it would have by-passed a key aspect of change management theory, namely, the need to get buy-in and commitment to the change which can only come from a process where those involved in the change have a strong voice in determining how they should approach the issues.

True to form the MOD took the overall Defence Operating Model as proposed by Levene and proceeded to change structures and processes in fairly short order, unfortunately, this has tended to miss a key element in the Levene report where he highlighted the need for a fundamental change in the *behaviours* and *culture* of the organisation. Consequently, the MOD finds itself in a position where it is not only downsizing significantly; it also needs to make major changes to both its structures and its operating processes in an environment where it has to live with tough financial constraints. Unfortunately, there is not much evidence that the expectations of their political masters adjusting their expectations accordingly. As far as they are concerned, it is business as usual.

Given that the delivery of the MOD transformation programme has not followed the sort of good practice that one might find in the academic literature, the programme has stagnated. And so this paper suggests six key issues that need to be addressed if the MOD is to have a fighting chance of delivering the Transformation that it needs to achieve. This will ensure that the MOD is to be able to live within the realities of the current and future threats as well as the realities of the financial envelop within which it will have to operate.

The key point to take away is that each of the issues identified are significant in themselves and do, of course, need to be viewed as being interdependent. However, even if this fact is appreciated the underlying challenge that is implied in these issues is that in order to address them the MOD needs to change its mind-set and approach the issues from a new perspective. At present there is no clear evidence that this has been appreciated. Instead, they have operated by the aphorism, *if the only tool you have is a hammer, every problem looks like a nail.*

Notes

[1] Michael Beer and Nitin Nohira, "Cracking the code of change," *Harvard Business Review* (May-June 2000), 133.

[2] In October 2010, Prime Minister David Cameron said Britain would still meet NATO's target of spending 2 percent of Gross Domestic Product on Defence and would continue to have the fourth largest military in the world and "punch above its weight in the world." David Cameron, *Statement on Strategic*

Defence and Security Review, Delivered at 10 Downing Street, October 19, 2010, available at <www.gov.uk/government/speeches/statement-on-strategic-Defence-and-security-review>.

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[11] Ibid., 81.

[12] Amir Levy and Uri Merry, *Organisational Transformation: Approaches, Strategies, Theories* (New York: Praeger Publishers, 1986).

[13] Hal Rainey, *Understanding and Managing Public Organisations* 2nd Edition, (San Francisco, Jossey-Bass Publishers, 1997).

[14] Beverly Fletcher, *Organisation Transformation Theorists and Practitioners: Profiles and Themes*, (New York, Praeger Publishers, 1990).

[15] Levy and Merry, *Organisational Transformation*, 5.

[16] William Bridges, *Managing Transitions: Making the Most of Change* 2nd ed. (Cambridge, MA: Da Capo Press, 2003).

[17] Bridges, *Managing Transitions*, 5.

[18] Beer and Nohira, "Cracking the code of change."

[19] *The Strategic Defence and Security Review* (Whitehall, London: HM Government, October 2010), available at <www.gov.uk/government/uploads/system/uploads/attachment_data/file/83773/SDSR-First-Annual-Report.pdf>.

[20] Lord Levene, David Allen, Bjorn Conway, Jon Day, Gerry Grimstone, Nick Houghton, George Iacobescu, Raymond McKeeve, and Baroness Noakes, *Defence Reform: An Independent Report into the Structure and Management of the Ministry of Defence* (Whitehall, London: Ministry of Defence, June 2011), available at <www.gov.uk/government/publications/Defence-reform-an-independent-report-into-the-structure-and-management-of-the-ministry-of-Defence--2>.

[21] *Strategy for Defence* (London: Ministry of Defence, 2010-2011), brochure, available at <www.gov.uk/government/uploads/system/uploads/attachment_data/file/27398/stategy_for_Defence_oct2011.pdf>.

[22] Levene et al., *Defence Reform*, 73.

[23] Bernard Gray, *Review of Acquisition for the Secretary of State for Defence: An Independent Report by Bernard Gray*, October 2009, available at <www.MOD.uk/NR/rdonlyres/78821960-14A0-429E-A90A-FA2A8C292C84/0/ReviewAcquisitionGrayreport.pdf>.

[24] Levene et al., *Defence Reform*.

[25] Ibid.

[26] William Bridges, *Managing Transitions*.

27 Levene et al., *Defence Reform*.

28 Ibid.

Chapter 16

About Doctrinal, Transformational, and Unobtrusive Leadership in the Military—A Dutch View

Peter Olsthoorn and Joseph Soeters

Leadership is the core business of military organizations, in history as much as today. But the conundrums about what military leadership is, or should be, remain unresolved. There are numerous views and debates, within and across national armed forces. We want to add to this debate by shedding some light on aspects of military leadership that have been uncovered so far. In doing so, we hope to add something to what is already known, instead of just contributing to the confusion. We will make use of Dutch experiences in Uruzgan Province in Afghanistan between 2002 and 2010 as well as in Bosnia in the 1990s, being aware that they may be different to some and similar to others, but not necessarily better.

This chapter first talks about how the Netherlands Armed Forces views leadership. To that end, the first section not only describes what can be found on leadership in the Netherlands Defence Doctrine, but also looks into the joint leadership vision of the Dutch forces, and some of the theory that underpins it. As is the case in most Western militaries, such documents tend to emphasize the importance of strong, visionary leaders, yet at the same time they also stress the need for decentralization of leadership and mission command in today's complex missions—two demands that seem hard to reconcile. After that outline of the official views, we will briefly describe some results of leadership research into the functioning of Dutch commanders in Bosnia and in Afghanistan. We conclude by demonstrating that the research showed that what works well on paper is not always what works (or how it works) in the real world. That brings us to the second aim of this chapter: based on the findings of the first two sections, we will introduce the notion of unobtrusive leadership. This concept could complement all those doctrines, visions, and theories that put the strong, visible leader to the foreground. The final section

describes how the leadership curriculum at the Netherlands Defence Academy fits into all this.

Leadership doctrine, vision, and underlying theory

In its current form, the joint Netherlands Defence Doctrine dates back to 2005. It emphasizes the importance of mission command and, thus, of decentralization of leadership. That the doctrine deems mission command so important is, according to that same doctrine, mainly because of the unstable and unpredictable circumstances in which many of today's missions take place.[1] Mission command, the doctrine states,

> is based on the decentralisation of authority *for the execution of all military operations, on the basis of the historical experience that, in all the chaos and friction to be expected, decisions can best be made at the level directly involved in the operation. Decentralisation provides subordinates with a sense of involvement. Another advantage is that only a limited amount of essential information has to be passed along the chain of command from top to bottom and vice versa. It also ensures that local commanders take decisions on the basis of the most recent and up-to-date information. It could be said that, as a general rule, the more unstable the circumstances, the lower the level of decision-making should be.*[2]

According to the doctrine, one of the building blocks, and an important prerequisite, of both mission command and decentralization is a high level of mutual trust. If mission command is to function successfully,

> *a superior not only needs to inspire confidence but he must also have confidence in his subordinates. On the one hand, mutual trust refers to the confidence personnel have in the leaders of the operation; on the other, it refers to the commander's confidence in his personnel that they will perform their mission well and in accordance with his intent. Trust is the cornerstone of command.*[3]

On first sight, then, the matter seems clear cut enough: commanders are expected to practice mission command, and to trust their subordinates, thus leaving ample room

for their subordinate commanders to take initiative, and act on their own best judgment. However, the doctrine also states that while,

> *command and control will be mission-oriented in theory, a higher or even the highest command level will in certain cases be required to decide how the mission is to be conducted, in which case it could still be necessary to impose directions and restrictions.*[4]

The Joint Doctrine Publication 5 *Command and Control*, published in 2012 as a supplement to the general doctrine, gives some clues as to what might amount to a sufficient ground to *not* practice mission command. In fact, there are quite a few of such reasons. The publication explicitly mentions no less than eight reservations, quoted verbatim here:

- The authority vested in the commander. If the allocated freedom of action is limited, this will also work through to lower levels.
- The quantity and number of assets available. A short supply of assets will usually lead to greater centralisation. This applies particularly in the case of air power.
- The nature and (political) sensitivity of the activities to be conducted in the campaign.
- Task maturity of the commander and subordinates. There will be more delegation and freedom in the case of experienced (subordinate) commanders who have worked with each other frequently and have a good understanding of each other's capabilities and limitations than there will be in the case of less experienced commanders.
- The nature of the physical operational environment. A relatively surveyable environment will usually offer greater scope for centralised control.
- Commander's personal style.
- The extent of multinationality and collaboration with non-military actors.
- The prevailing culture in individual services and within countries. Variations in the style of command between the services are usually the result of assets, history, doctrine and the prevailing physical environment. Those differences also exist between nations.[5]

Some of these factors, such as political sensitivity, multinationality, and collaboration with non-military actors, will be of influence in virtually all missions Western militaries conduct, both at present and in the foreseeable future.

Negatively put, one could say that the doctrine provides every commander who has some doubts or hesitations about the benefits or feasibility of mission command with a loophole, at least in theory. One could argue that providing commanders with such a way out is more or less in line with the emphasis on strong leaders elsewhere in the doctrine. Doctrine defines leadership as "the projection of the personality and character of an individual, usually the commander, to motivate soldiers to do what is expected of them."[6] And even though the doctrine acknowledges that "[t]here is no formula for leadership," and states that "each commander will motivate his soldiers in different ways," it is telling that it mentions using "persuasive powers, coercion, the strength of his personality, charm or a combination of these methods" as examples of these different ways.[7] Necessary leadership qualities include "vision and intelligence, originality, insight and good judgment, intuition, initiative, professional expertise, courage and resolve, self-confidence (if based on his own qualities), knowledge and experience, integrity and the ability to set an example, as well as the ability to communicate and to act in an ethically correct manner."[8]

Surprisingly, the leadership vision of the Netherlands Armed Forces, a joint publication that should form a guideline for the leadership education of enlisted, non-commissioned officers (NCOs), and officers alike, is on the whole a lot less specific on mission command, decentralization, and when (not) to practice it—but maybe that is something intrinsic to documents that want to espouse a vision. What the leadership vision shares with the doctrine, however, is the already mentioned emphasis on strong leadership. In the case of the leadership vision this preference for strong leaders shows especially from the theoretical framework chosen. Before 2007, Hersey and Blanchard's theory of situational leadership formed the basis for the leadership vision. Put briefly, this theory holds that effective leaders base their leadership style on the maturity of their subordinates. That latter factor determines which combination of task-oriented and relations-oriented behavior will work best. Now, although the 2007 vision still sees a role for this theory, it at the same time is more in tune with modern leadership theories as it seeks to incorporate elements of charismatic, inspirational, and transformational leadership. It stresses the importance of setting a good example, and states that leading people is more than just managing them: inspiring leadership is about realizing one's own potential, and

that of the group. The tone of the communication, listening, and gaining trust are deemed important.

With the remark that leadership is more than managing, the leadership vision pays tribute to the, especially in the military, popular view that management is something distinctively inferior to leadership.[9] So, where Mintzberg sees leadership as one of the no less than ten roles a manager has to fulfill,[10] clearly implying that managing involves in fact a lot more than leading, most military authors see this differently, at least regarding leadership in military organizations. Although one could question to what extent such views are accurate,[11] their flourishing is probably partly due to the fact that working (and thus also leading) in the military under sometimes life-threatening conditions is seen as very different from holding a job in the civilian world. But it is not unlikely that this preference for leaders over managers is also due to the view of leaders as being strong, visionary, and active, as opposed to inactive, merely facilitating managers.

The Netherlands armed forces currently work on a new leadership vision, which is to appear in 2014. It should be based on values, short, recognizable, and there should be no mentioning of theory in the document itself. However, that last precondition does not mean that there is no theory underpinning the new vision. In fact, a look on the underlying documentation learns that the new vision should incorporate quite a number of leadership perspectives, such as transformational leadership, team leadership, authentic leadership, adaptive leadership, servant leadership, and ethical leadership.[12] The basis of the whole enterprise, however, is Quinn's rather demanding competing values model, which distinguishes eight leadership roles (and 24 competencies). These roles are that of innovator, broker, producer, director, coordinator, monitor, facilitator, and mentor—and the effective leader is he who is able to fulfill them all.[13] It thus seems that Quinn's competing values model puts a leader to the fore who is omnipresent, and who should be able to do everything, and be everywhere. Quinn's theory, however, is fairly typical in this aspect: most leadership theories tend to assume that the most effective leader is the one who has the most influence on his subordinates.

The theory of transformational leadership, popular in many militaries today, can serve as an example of that tendency.[14] Although transformational leadership wants to avoid some of the main pitfalls of charismatic leadership—it has often been pointed out that charismatic leadership is prone to lead to more centralization and, what is more, to the suboptimal development of subordinates[15]—it is not clear whether it

really succeeds in doing so. Bass, the main theorist behind transformational leadership, sums this theory up as follows:

> *Leadership is charismatic such that the follower seeks to identify with the leader and emulate him or her. The leadership inspires the follower with challenge and persuasion, providing a meaning and understanding. The leadership is intellectually stimulating, expanding the follower's use of his or her abilities. Finally, the leadership is individually considerate, providing the follower with support, mentoring and coaching.*[16]

Now, there seems to be a tension in the theory here, especially between the elements of inspirational motivation (i.e., vision) and idealized influence (i.e., charisma) on the one hand, and intellectual stimulation on the other. Although "(…) transformational leaders can share vision building and idea generation that could be a democratic and collective enterprise,"[17] in practice such shared vision building will probably be somewhat of an exception to the rule under a truly charismatic and visionary leader. Transformational leadership, but the same holds to an even greater extent for the leadership the theorists of charismatic and visionary leadership promote, is mainly about strong, very active leaders, while less visible leadership is often negatively associated with laissez-faire leadership, for instance by Bass himself.[18] In short, most modern leadership theories "put much stress on the omnipresence and omniscience of the leader," and "many military leadership doctrines build on these theories."[19]

Leadership Research

In the two previous sections two seemingly contrary tendencies have been identified: militaries (the Dutch military is certainly not alone in this) like to see their leaders strong, persuasive, and visionary, yet at the same time they stress the importance of decentralization of leadership and mission command. The question is, of course, which of these opposing tendencies is most likely to win through. Now, the Netherlands Defence Academy has somewhat of a tradition of researching the way the leaders it has produced lead, and especially the extent to which they practice mission command and the decentralization of leadership—overall, the findings were mixed.

Research by Vogelaar and others, for instance, showed that especially during the United Nations Protection Force (UNPROFOR), Implementation Force (IFOR), and Stabilization Force (SFOR) missions in Bosnia, mission command and decentraliza-

tion were practiced to a lesser extent than one might expect on the basis of the leadership doctrine of that moment, which emphasized the importance of decentralizing leadership as much as the current doctrine does. Yet, what is interesting here is that that same doctrine nonetheless backed commanders who monitored fairly closely; somewhat reminding of the long list of reservations in the more recent Joint Doctrine Publication 5 *Command and Control*, which was quoted in the above, it deemed mission command less feasible in the case of:

- Political sensitive missions
- International cooperation
- Combined units
- The possibility that decentralization would cause differences in implementation.[20]

Evidently, some (if not all) of these factors would be present in every mission of that period (as will be the case in today's missions), so commanders could always find a pretext to not practice mission command.[21] And in practice, most leadership tended to be rather centralized. The strict impartiality that was required from military personnel, the often unclear and ambiguous objectives of the missions, the deployment of mixed units and the ensuing lack of trust, the development of routines, the stress on safety precautions, and finally the availability of online information and communication, all contributed something to this tendency to centralize control and command.[22]

In a later article Vogelaar argued, summing up his earlier findings, that "central commanders tend to centralize authority too much and keep things too much under strict supervision."[23] Factors that might play a role in maintaining the status quo are, first of all, the simple fact that the military has always been a hierarchical organization, with the higher-ranking person having more power than the lower-ranking one.[24] What is more, "military leaders have more coercive power at their disposal than leaders in many other organizations," which makes that they can always choose to force obedience.[25] Finally, there is the fact that "in the military central commanders are in the position to control information"; as commanders are the ones that are likely to be held responsible for what happens during a mission, they will want in-depth insight in the situation at hand.[26]

Of course, most of the factors that played a role in Bosnia were just as well present in the more recent missions in southern Iraq (from 2004 to 2005) and Afghani-

stan (from 2006 to 2010 in Uruzgan, and from 2012 to 2014 in Kunduz). Although one might expect that political sensitivity played less of a role as impartiality was clearly not a factor during these missions, they were in fact politically quite delicate. For instance, political support in parliament for the decision in early 2006 to send troops to Uruzgan was on the condition that it should be a "rebuilding-mission," and not a "fighting-mission." In line with that sentiment, parliamentarians and journalists tended to closely monitor the ratio between the progresses made in rebuilding and the time and effort spent in combating the Taliban; something that is likely to have an influence on the amount of autonomy granted to sub-commanders in Uruzgan.[27]

Nonetheless, it seems that in Uruzgan the theory of mission command was put to practice to a greater extent than had been the case in Bosnia in the 1990s. For instance, regularly deploying in populated areas was considered a key element for the success of the mission, but how this,

> *should be achieved was left to the discretion of sub-commanders, with the company commanders making the plans, and platoon commanders actually carrying out the assignments outside the base. These subordinate commanders, realizing that commitment of the population was the most important goal to be attained, had the latitude to choose the most appropriate moments to deploy the units over the area for which they were responsible. They had to make decisions on aspects such as: what tasks should the platoons perform outside the base, when should they leave the base, where should they go, in what formation, and how long should they stay away.*[28]

Interestingly, and perhaps typical for the way the military organization functions, in Uruzgan lieutenants commanding a platoon would have,

> *command over their platoon as a whole, but not over the group in which they moved along. The leader of the group was the group commander. When the group entered a combat or emergency situation, the group commander had the lead over the group including the platoon commander who was leading the whole platoon including the group which he was part of. The platoon commander received orders from the group commander about what to do as a group member. While sending messages to other*

groups, he could be pulled back, pushed down on the ground, or given orders to move to another location by the group commander. This reversal of leadership is important because the platoon commander had to overview the whole situation, not being distracted by the combat action in the situation at hand.[29]

It seems evident that such a reversal of leadership can only work if leaders, in this case platoon commanders, are prepared to stay on the background now and then, being able to occasionally suppress their desire to interfere.[30] Likewise, one could argue that the amount of discretion these platoon commanders have depends on their commanders having a similar leadership attitude; taking the notions of mission command and decentralization of leadership seriously probably asks for a somewhat less obtrusive style of leadership than is commonly espoused in military doctrine and leadership theory alike.[31]

Unobtrusive leadership

Now, there are thinkers and theories that advocate such a less obtrusive leadership style, but it seems that they do not get a lot of attention in most militaries. An example of such a theory is the substitute theory of leadership, which does not aim at increasing the influence of the leader, but at making leadership less necessary.[32] Building on the behavior approach to leadership, which distinguishes between relations oriented behavior and task oriented behavior, this theory identifies factors of the organization, the work, and the employees, that can form a substitute for leadership. For instance, structured tasks can function as a substitute for task oriented leadership behavior, while intrinsically rewarding work might form a substitute for relations oriented behavior. Strong group cohesion can be a substitute for both forms of behavior. The theory also points to the role of neutralizers: factors that nullify a leader's influence, such as subordinate insensitivity to rewards or, more relevant in the military context, geographical distance between leader and subordinates.

An interesting substitute for leadership in this context is professionalism; according to Kerr and Jermier, subordinates having a professional orientation can serve as a substitute for task oriented behavior and relations oriented behavior alike.[33] Professionals tend to place their own professional judgment above that of the management that supervises their work, based on the conviction that their training, education, and professional experience makes their judgment a more informed one

compared to that of those at a higher level in the organization, usually having a different background and training (in that sense, a professional attitude can also be somewhat of a neutralizer…). Surgeons, for instance, are as a rule more concerned about the judgments of their fellow surgeons, such as those brought to them in the verdicts of their professional association, than about those of their happen-to-be-appointed leader of that moment.[34] In their article on leadership substitutes, Kerr and Jermier give an example from a military context in the form of Captain Benjamin "Hawkeye" Pierce, M.D., from the television series *M*A*S*H*,[35] albeit his case is more an instance of medical professionalism than of military professionalism. However, if the military understood to be a profession, as most authors today seem to believe, and if professionalism is a substitute for leadership, it follows that there might be less need for leadership in the military than is commonly held.

Yet, although the substitute theory of leadership makes an important contribution to leadership studies in providing us with a different view on (the need for) leadership influence, it is not exactly what we want to propose here. It is a leadership theory (if we can call it that) that is a lot older that does capture the essence of what we want to bring forward. Around 550 BC, the Chinese philosopher Lao-tzu is thought to have said that

> [a] *leader is best when people barely know he exists. Not so good when people obey and acclaim him. Worse when they despise him. But of a good leader who talks little when his work is done, his aim fulfilled, they will say "We did it ourselves."*

What we see here is the idea of what we would like to call *unobtrusive leadership*. We have loosely based this concept on the notion of unobtrusive research measures in the social sciences. The term unobtrusive measures was coined by Webb et al. in their book *Unobtrusive Measures*, which was a plea to not always opt unthinkingly for the usual research methods, such as the interview and questionnaire.[36] Such methods not only measure attitudes; they also create them, and they tend to elicit atypical responses.[37] Also, interviewees will likely report socially desirable behavior, and to use impression management "to maintain their standing in the eyes of an interviewer.[38] Observing, using archived material, and studying physical traces (for instance, wear of floor tiles around an exhibit tell about visitor flows in a museum) are examples of unobtrusive measures.[39] Now, Webb and Weick see the finding that "[i]n war, victory

goes to those armies whose leaders' uniforms are least impressive" as an example of a result of unobtrusive research,[40] but perhaps one could also see that same finding as an argument for less obtrusive forms of leadership.

We think that such a less obtrusive form of leadership could be characterized by the following attributes:

- It lacks charisma, like the leadership of many successful CEOs, such as Bill Gates; instead, it emphasizes modesty, inconspicuous, quiet, and even introvert, behavior of the leaders;[41]
- It provides opportunities for the employees to regulate themselves through identification and internalization, i.e., through linking the legitimacy of the organization's rules with the employee's social values, instead of using a command-and-control approach.[42] In that aspect, it perhaps somewhat resembles the notion of *Innere Führung* of the German Bundeswehr;
- It emphasizes team-leadership, which entails the organic—that is to say, not in a planned manner—distribution of various leadership tasks (downward, outside, and upward; details, pressures, and politics) among the employees with leadership roles;[43]
- It makes use of informal dialoguing and facilitates collaborative talk among employees (focusing on similarities and shared interests), at the same time not suppressing assertive talk, through which employees want to influence and frame the discussions that go on within them;[44]
- It does not punish or retaliate continuously, can occasionally forgive a failure, violation or attack, sets the right example and punishes, if really needed and without harming others, the one who systematically violated good practices.[45]

All in all, unobtrusive leadership is not absent or laissez-faire leadership, yet it is more about soft than hard control; it is more like the behavior of a pragmatist fox than of a principal hedgehog.[46] In fact, it comes very close to Lao-tzu's description. It may create a better atmosphere for employees to work in, but it may also imply less dangers compared to what charismatic leadership often induces. In the military such dangers may lurk in unnecessary casualties at all sides of the operational spectrum. Military history—ancient and recent—is replete with such tragedies.

Leadership Education

To educate future officers for working in a complex environment, the NLDA has a leadership and ethics curriculum that is fairly elaborate, and for a large part geared to operations other than war. The centrepiece of the leadership and ethics curriculum, the second year course *Military Leadership and Ethics*, was developed within the framework of the expeditionary era. Subjects within this course include moral disengagement, erosion of standards during difficult circumstances, social cohesion, commander's responsibility, just war theory, and military virtues such as courage and loyalty. The required reading for this course is fairly academic, and includes, among a lot more, studying Gary Yukl's *Leadership in Organizations*, and two readers with articles on leadership and ethics in a military context. Students have to give a presentation, write a paper, and pass an exam to meet the course's requirements. In addition to this course, there are some other, equally relevant, courses that should offer the cadets and midshipmen some insight into the complexities of today's operations. The compulsory course *Armed Forces, Politics, and Society* is aimed at increasing their understanding of the workings of politics and bureaucracies, and of the way political considerations can have an impact on the conditions and the means with which military personnel is sent abroad. Topics include civil-military decisionmaking, and the differences between military and civilian culture. The elective course *Armed Forces and the Media* has as subject matter both the "images of war" and the "war of images," focussing on how the different parties in a conflict construct and sell their version of reality.

In general, the link between the leadership curriculum at the NLDA and the leadership vision is weak at best. For instance, where the current vision clearly considers Hersey and Blanchard's theory of situational leadership to be a very important one, cadets and midshipmen read in Yukl's handbook that there is little empirical validation for such contingency theories. And where the leadership vision asks for inspiring, visionary leaders, the course material points to some serious drawbacks of charismatic leadership.[47] Although it is most definitely not an aim of the course, it might thus have the collateral benefit of helping to prepare the minds of the future officers for a less obtrusive style of military leadership.

Conclusion

In the above a number of factors have been identified that seem to go against the heart of the idea of mission command. Among them were military doctrine, the personal style of many military leaders, and the equation of effective leaders with strong

leaders in most leadership theories. As we have seen, Dutch military doctrine sees the personal style of a commander as a factor influencing the amount of decentralization of leadership, and, thus, the extent to which mission command will (or can) be practiced. In the military, that personal style will more often than not be a rather visible style of leadership (one could perhaps even say it is more of a military style than a personal style). As we also have seen, most military doctrine, and the Dutch doctrine is an example of that, also seems to presuppose a strong leader. In doing so, it is in line with nearly all leadership theories, including those underlying the leadership vision (old and new) of the Netherlands Armed Forces, which tend to emphasize the strong leader, and are often about how to augment one's influence as a leader. In that light, it is not surprising that mission command and decentralization are less common than ideally would be the case. To somewhat counter that tendency, we have proposed a different view on leadership, which we coined unobtrusive leadership, not to the neglect of other approaches, but as a complement to traditional views of leadership.

Notes

[1] *Netherlands Defence Doctrine* (The Hague: Ministry of Defence, 2005), §515, 90.

[2] Ibid., §512, 89.

[3] Ibid., §515, 90.

[4] Ibid., §511, 89.

[5] *Command and Control* (The Hague: Ministry of Defence, 2012), §2.8, 59-60.

[6] *Netherlands Defence Doctrine*, §518, 91.

[7] Ibid., §518, 91.

[8] Ibid., §520, 92.

[9] Thomas A. Kolditz, *In Extremis Leadership: Leading as if Your Life Depended on it* (San Francisco: Wiley & Sons, 2007).

[10] Henry Mintzberg, *The Nature of Managerial Work* (New York: Harper & Row, 1973).

[11] See Delphine Resteigne and Joseph Soeters, "Managing Militarily," *Armed Forces & Society* 35, no.2 (2009), 307-332; Joseph Soeters, Donna Winslow, and Alise Weibull, "Military Culture," in *Handbook of the Sociology of the Military*, ed. Guiseppe Caforio, 237-54 (New York: Kluwer Academic/Plenum, 2003).

[12] *Actualisering Visie Leidinggeven Defensie* [*Updating the Defense Leadership Vision*] (The Hague: Ministry of Defence, 2012).

[13] Robert E. Quinn, "Applying the Competing Values Approach to Leadership: Toward an Integrative Model," in *Managers and Leaders: An International Perspective*, ed. James G. Hunt et al., 10-27 (New York: Pergamon, 1984).

[14] This despite the fact that "[t]he term *transformational* has been broadly defined by many writers to include almost any type of effective leadership, regardless of the underlying influence processes." Gary Yukl, *Leadership in Organizations* (Upper Saddle River: Prentice Hall, 2002), 261.

[15] David M. Keithly, and James J. Tritten, "A Charismatic Dimension of Military Leadership?" *Journal*

of Political and Military Sociology 25, no. 1 (1997), 131. Some go a bit further than that, however. According to Deluga, "Machiavellianism and charismatic leadership are not identical concepts. Yet, the observed relationships indicate that Machiavellianism and charismatic leadership could have similar features including image building behaviors, considerable self-confidence, and effective emotional regulation. The joint purpose is to craft a favored persona with the intent of influencing others." Ronald J. Deluga, "American presidential Machiavellianism. Implications for charismatic leadership and rated performance," *The Leadership Quarterly* 12, no. 3 (2001), 355. For a more recent criticism on the dangerous aspects of charismatic leadership in business, see Christian Stadler and Davis Dyer, "Why Good Leaders Don't Need Charisma," *Sloan Management Review* (Spring Issue 2013). Under charismatic leadership, often coming along with overconfidence, things may go quickly, but things may also go quickly wrong, strategically and/or ethically. For the military in this respect, see: Dominic D. P. Johnson, *Overconfidence and War: the Havoc and Glory of Positive Illusions* (Cambridge: Harvard University Press, 2004).

[16] Bernard Bass, *A New Paradigm of Leadership: An Inquiry into Transformational Leadership* (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1996), 5.

[17] Bernard Bass, *Developing Potential across a Full Range of Leadership: Cases on Transactional and Transformational Leadership* (Mahwah, New Jersey: Lawrence Erlbaum, 2002), 6.

[18] Bass, *A New Paradigm of Leadership*.

[19] Ad Vogelaar, "Leadership from the Edge: A Matter of Balance," *Journal of Leadership & Organizational Studies* 13, no. 3 (2007), 36.

[20] *Leidraad Commandovoering* [*Command Guideline*] (The Hague: Ministry of Defence, 1996), 51.

[21] Eric-Hans Kramer, *Organizing Doubt: Grounded Theory, Army Units and Dealing with Dynamic Complexity* (Malmo: Liber & Copenhagen Business School Press, 2007), 213-4.

[22] Ad Vogelaar and Eric-Hans Kramer, "Mission Command in Dutch Peace Support Missions," *Armed Forces & Society* 30, no. 3 (2004), 409-31.

[23] Vogelaar, "Leadership from the Edge," 29.

[24] Ibid., 38.

[25] Ibid.

[26] Ibid.

[27] Vogelaar and Kramer, "Mission Command," 423, 426.

[28] Ad Vogelaar and Sander Dalenberg, "On Your Own in the Desert: The Dynamics of Self-Steering Leadership," in *Mission Uruzgan. Collaborating in Multiple Coalitions for Afghanistan*, ed. Robert Beeres et al., 93-106 (Amsterdam: Amsterdam University Press, 2012), 94. In Uruzgan, however, not all partners of the Dutch were too keen on that kind of leadership, especially not when pushed too far in their view. As two Australian officers put it: "Dutch Army guys polder. Every fucking individual who considers himself important needs to say something. That is detrimental to the mission. We have to take decisions with the information we have, but these Dutch guys are prepared to talk so long that no decision is needed anymore. … Among the Dutch ... there is a very high willingness of subordinates to say 'Yes, but ...' to discuss endlessly about decisions, about plans, about anything." Joseph Soeters, Tom Bijlsma, and Gijs van den Heuvel, "Trust Thy Ally," in *Mission Uruzgan. Collaborating in Multiple Coalitions for Afghanistan*, ed. Robert Beeres et al., 161-76 (Amsterdam: Amsterdam University Press , 2012), 163

[29] Vogelaar and Dalenberg, "On Your Own in the Desert," 95.

[30] Keith Spacie, a retired Major General of the British Forces, holds that especially at the lower levels visionary leadership is not the best of ideas: "it is obvious that the requirement at the lower end of the spectrum [of authority] will be more for practical and pragmatic leadership, at the higher end more (but

not entirely) for that of a visionary kind." Keith Spacie, "Leadership—The Centre of Command," in *The Human in Command: Peace Support Operations*, ed. Peter Essens et al., 205-11 (Amsterdam: Mets & Schilt, 2002), 45.

[31] One could argue that this holds even truer for units that are not deployed, and for that part of the military organization—and that is a large part, of course—that is never directly involved in combat, together making up the "cold organization." Soeters et al., "Military Culture."

[32] Steven Kerr and John M. Jermier, "Substitutes for leadership: Their meaning and measurement," *Organizational Behavior and Human Performance* 22, no. 3 (1978), 375-403.

[33] Ibid., 398.

[34] In the case of the military, professionalization is sometimes taken to mean something as making use of volunteer soldiers who are skilled, well-educated, et cetera. However, this description fails to make clear what sets a professionalized army truly apart from other occupations. Others describe a military professional as someone who is prepared to loyally fulfill the missions imposed by politicians, leaving one's own opinions aside. This, however, seems to be at odds with what is generally understood by the term professional: someone with an expert body of knowledge and, therefore, a considerable degree of discretion and professional autonomy. See also Martin L. Cook, "Army Professionalism: Service to What Ends?" in *The Future of the Army Profession*, ed. Don M. Snider and Gayle L. Watkins (New York: McGraw-Hill Primus Custom Publishing, 2002), 342-3. Professionals are in general more loyal to their profession, their professional ethic, and their clients, than to their organization and their colleagues, and it is this element that sets a profession apart from any other occupation that requires a fair amount of skill and education. Peter Olsthoorn, *Military Ethics and Virtues: An Interdisciplinary Approach for the 21st Century* (London: Routledge, 2010), 83-5.

[35] Kerr and Jermier, "Substitutes for Leadership," 387.

[36] Eugene Webb et al., *Unobtrusive Measures; Nonreactive Research in the Social Sciences* (Chicago: Rand McNally, 1966).

[37] Ibid., 1.

[38] Raymond M. Lee, *Unobtrusive Methods in Social Research* (Buckingham: Open University Press, 2000). What is often overlooked, incidentally, is that the rationale behind that plea was a *moral* one: in their preface Webb et al. explain that, in their view, the usual methods are often manipulative and invasive to the privacy of research subject.

[39] Webb, *Unobtrusive Measures*, 2, 36.

[40] Webb and Weick, "Unobtrusive Measures in Organizational Theory."

[41] Susan Cain, *Quiet: The Power of Introverts in a World that Cannot Stop Talking* (London: Penguin Books, 2012).

[42] Tom R. Tyler and Steven L. Blader, "Can Business Effectively Regulate Employee Conduct? The Antecedents of Rule Following in Work Settings," *Academy of Management Journal* 48, no. 8 (2005), 1143-1158.

[43] Henry Mintzberg, "Managing on the Edges," *International Journal of Public Sector Management* 10, no. 3 (1997), 131-153.

[44] Cynthia Hardy, Thomas B. Lawrence and David Grant, "Discourse and Collaboration: the Role of Conversations and Collective Identity," *Academy of Management Journal* 30, no. 1 (2005), 58-77. See also Resteigne and Soeters, "Managing Militarily."

[45] Martin Nowak, *SuperCooperators: Evolution, Altruism and Human Behavior or Why We Need Each Other to Succeed* (Edinburgh: Canongate, 2011).

[46] Nate Silver, *The Signal and the Noise: Why So Many Predictions Fail—but Some Don't* (New York: Penguin Press, 2012).

[47] A case analyzed is that of the charismatic Field Marshall Bernard Montgomery who, offended after General Eisenhower took over Ground Forces Command against Montgomery's wish, in his pursuance of personal glory according to some accounts took irresponsible risks with the failed Operation Market Garden; an operation which should have brought him back to the top position yet in fact cost the lives of many soldiers.

Part Five

Enlisted Education and Other Concepts

Panel six of the Conference addressed the issues surrounding Enlisted Education and the progress that has been made over the past few years in this arena. Two outstanding enlisted leaders spoke during this panel about the current programs available for joint and multinational education for senior enlisted personnel. This is something that is most important to those within the North Atlantic Treaty Organization (NATO). It must be recognized at the start that Enlisted Education programs are just as important as Officer Education programs. There are too many instances, such as in the old Soviet model, in which all decisions were made by officers, and where the lack of educated and trained non-commissioned personnel led to mission failure. So the current initiatives in which joint and multinational enlisted education programs are coming to the forefront are very gratifying indeed.

All non-commissioned officers (NCOs) are responsible for setting and maintaining high quality standards. NCO models are faithful to the values of their Service and are standard bearers and role models critical to training, educating, and developing subordinates. NCOs are accountable for caring for their subordinates and setting the example for them. NCOs have roles as small unit leaders, trainers, mentors, communicators, and advisors. NCOs at all echelons understand and practice the mission command philosophy in order to execute unified operations with their service or as part of a joint or multinational force. Staff NCOs effectively support execution of warfighting staff tasks and are proficient in their aspects of the mission command system. As experienced and expert leaders, they play a key role in the development of junior officers. NCOs form professional and personal bonds with officers based on mutual trust and common goals. Senior NCOs advise commanders at all levels and are an important source of knowledge and discipline for all enlisted matters.

Soldiers, Sailors, Marines, Airmen, and Coast Guardsmen look to their NCOs for solutions, guidance, inspiration, and development. They can relate to NCOs since they were developed through the enlisted ranks and the NCO Education System. They expect NCOs to convey information and provide day-to-day guidance to get the job done. To answer the challenges of the operational environment, NCOs train enlisted personnel under them to prepare, perform, and cope regardless of the situation.

Non-commissioned officer development is achieved through a progressive sequence of local and Service-level education, unit and individual training, and assignments of increasing scope and responsibility. Joint Professional Military Education programs are also available for senior NCOs. The NCO Corps has a small population of senior NCOs who serve in positions at the strategic level. These assignments are small in number, and the NCOs who fill them are selected through a rigorous process to prepare and identify the right talent to lead in these high-visibility positions. These include Service Component Sergeants Major, senior NCOs in major service commands and joint combatant commands, and legislative liaison positions. In these senior level roles, NCOs contribute and advise senior commanders to ensure successful mission accomplishment.

The first speaker in this Enlisted Education panel, Mr. John Lipps, is a recognized expert in Enlisted Joint Professional Military Education (EJPME) and senior leader development at National Defense University's (NDU) Joint Forces Staff College in Norfolk, Virginia, focused his remarks on the status and importance of enlisted joint education. He pointed out that General Peter Pace, U.S. Marine Corps, as Chairman of the Joint Chiefs of Staff, instituted enlisted education for the U.S. military with CJCSI 1805.01 *Enlisted Professional Military Education Policy (EPMEP)* in 2005. The policy identifies three levels of EJPME: basic, career, and senior. Mr. Lipps noted that NDU offers EJPME though a variety of courses and delivery methods from online distance education certificates to a resident program awarding a master's degree in strategic security studies. He added that NDU is not alone in providing EJPME opportunities as U.S. Special Operations Command's Joint Special Operations University in Tampa, Florida, offers a joint special operations forces senior enlisted academy program. These joint education programs focus on U.S. senior enlisted personnel from all components but include students from across the international and interagency communities. Mr. Lipps pointed out that these and other joint education programs are all about preparing noncommissioned officers and chief petty officers in joint assignments for their roles as senior enlisted leaders and advisors to commanders.

The second speaker, Warrant Officer Class 1 Marc Wicks RM, served as the Corps Regimental Sergeant Major of the Royal Marine Corps, (the most senior enlisted position in the United Kingdom Royal Marines), until he was selected to be the Command Sergeant Major of the NATO Headquarters Supreme Allied Command Transformation. He pointed out that NATO Enlisted Development Programs have been developed to bridge the gaps in Enlisted Leader Development. Their objective is

to provide the Alliance with a Vision and Strategic Imperatives for the NCO Corps. In this effort, they prepare NCOs to serve in NATO or Alliance national forces next to the Commander. In this role, they familiarize enlisted leaders with how to support and advise Senior Commanders. In the process of developing these NCOs, they have instituted an Innovative Senior Enlisted Leader course at the NATO School in Oberammergau, Germany, and accredited the Leadership in a Multi-National Environment course conducted in Luzerne, Switzerland, that serve NCOs in the NATO Alliance (which clearly includes the United States). There has also been a concerted effort by the Partnership for Peace Consortium, supported by Senior Enlisted Leaders, to produce a Professional Military Education Reference Curriculum for NCOs that is due for publication and release later this year, as well as an International Senior Enlisted Seminar (ISES). These NATO initiatives for NCO Development are leading the way in Enlisted Education throughout NATO.

Based on the above and the papers presented in this panel, it is clear that the joint and multinational emphasis being placed on enlisted education is already paying dividends. The NCOs who complete these new courses of study will lead the way in future conflicts as a result of the skills and relationships they develop during these Enlisted Education Programs.

The Conference concluded with one final panel consisting of several different presentations. Professor Liz Yeomans, Course Director at the Joint Forces Staff College, submitted a case study in transformation calling for the creation of an International Operations Response Framework. This proposal comes in the wake of a lesson learned from the wars in Iraq and Afghanistan: re-establishment of civil order in the aftermath of regime change must be a team effort. To do this, the new Framework must integrate all the various activities of the U.S. Government, harmonize those activities with ongoing military operations, and create the capacity for a civilian surge.

Dr. David Moore, a Professor at the United Kingdom Defence Academy at Cranfield University, presented defense acquisition as another case study in transformation. The changes in the 21st century security environment inevitably require changes in the way that defense acquisition is undertaken. To tackle this, Dr. Moore suggests a need for a new defense acquisition professional who understands the context, contingencies, and complexities of the current environment. Dr. Moore believes this individual should be part of a cross-boundary team with a wide perspective, a career path that encompasses acquisition as a whole, and can inspire and influence decisionmaking at all levels, based upon professional judgment (supported by pertinent systems and processes).

Dr. Cathy Downes, a Professor at the National Defense University's iCollege, aptly concluded the conference with a call for a new class of "National Security Educators." All of the brilliant ideas and calls for change aforementioned in this publication are null and void without a professional class of educators. Current faculty are primarily subject matter experts and experienced military/government practitioners. Their formative development as educators most usually involved brief overviews of classroom techniques and on-the-job training. The gap between current faculty capabilities as educators and where technology is taking education is growing rapidly. As the gap grows, we are approaching quickly a point where it will become a bridge too wide to traverse. To resolve this looming crisis, Dr. Downes makes several recommendations at the Joint level, and then tightens them for application at her home institution, the National Defense University.

Chapter 17

Taking the Next Step in Transforming Comprehensive Approach: Designing a Functional International Operations Response Framework

Elizabeth A. Yeomans and Jon W. Stull

Whole-of-government—is it real? Can it be applied beyond the United States? The desired and necessary ability of a government to coordinate among its various elements of national power has long been a sought after goal. As experience has shown, it also rapidly becomes a requirement when implementing a policy that requires restoring a failed state, replacing a defeated regime, or responding to an overwhelming natural disaster. The nation's recent involvement in both Afghanistan and Iraq identified this critical requirement and created a demand that initiated innovation. However, this innovation in organization and process has failed. It failed to transform because the culture of the various organizations and the bulk of the professionals within each of the government agencies have not accepted and do not value new ways of conducting business. In short, the government's rhetoric concerning the need to change is not matched by a commensurate urgency to value that change.

Despite the experience of multiple contingencies, and the recognition that the "lessons learned" in the wake of these operations, required a new appreciation for organizing interagency activities, real progress is fleeting. The ability and inclination to coordinate those activities and provide opportunities for the professionals within disparate organizations to learn together (both through education and through operational experience) is the exception and not the rule. Examples of this coordination exist, such as those of the Civil Operations and Revolutionary Development Support, better known as CORDS, during the Vietnam War, to the resurrection of effective population-centric counterinsurgency doctrine guided by General David H. Petraeus, but it has been intermittent. A consistently applied method of coordination across applicable government agencies remains elusive. Regrettably, little has changed

other than the date of the lessons learned reports created in the wake of operations. For example, many of the lessons learned during Operation *Uphold Democracy*[1] were repeated almost 20 years later in the lessons identified in the Joint Chiefs of Staff's report, *A Decade of War*.[2]

Efforts to integrate the activities of various government agencies to re-establish civil order and stability have been fraught with challenges and frustrations, not only in the nation's most recent efforts in Afghanistan and Iraq, but in other operations for the last several decades. During Operation *Just Cause* (1989-1990) and *Promote Liberty* (1990-1994) in Panama, the United States learned the need to establish order and stability immediately in the wake of hostilities. Similar lessons were realized in a series of contingencies requiring significant humanitarian assistance as part of major combat operations continued through that decade: assisting the Kurds in Iraq (*Provide Comfort*, 1991-1994); stabilizing and assisting the Balkans (*Provide Promise*, 1992-1996); ensuring delivery of aid to starving Somalis (*Restore Hope*, 1992-1993); and returning a democratically elected government and provide assistance to Haitians (*Uphold Democracy*, 1994-1995).[3]

These operations revealed a number of standard lessons across each circumstance. First, it is critically necessary for stability to be immediately restored. Second, a unified yet flexible organizational structure is important. Third, humanitarian needs that can be revealed by an ever-present media may dictate political decisions. Fourth, professionals of other departments and agencies have to experience working and learning with each other prior to operations. And finally, all players must share a common understanding of the operational environment, and an accepted means to communicate with each other. Yet the same lessons that were not remembered during the 1990s were "re-discovered" in the first decade of the next century in Afghanistan and Iraq.

Nevertheless, even with the wide-spread dismissal of these lessons, some hard won progress occurred. The initial humanitarian success in Somalia, followed by the frustrations of an ever-evolving mission to disarm a popular warlord resulted in the Clinton administration establishing guidance for future involvement in peace operations through the promulgation of Presidential Decision Directive (PDD)-25, *U.S. Policy on Reforming Multilateral Peace Operations*.[4] Although issued after the fact, PDD-25 established policy on reforming U.S. participation in multilateral peace operations and created a framework under which the United States would participate in future United Nations operations, establishing definitions for frequently used language, and recommending what agencies would be responsible for which actions.

This framing of U.S. involvement in multilateral operations was followed three years later by PDD-56, *Managing Complex Contingency Operations*, which addressed more specifically how to coordinate planning within the U.S. Government for interagency coordination in answering complex contingency operations. This document further clarified that the term complex contingency operations would be used for "multi-dimensional operations composed of such components as political/diplomatic, humanitarian, intelligence, economic development, and security...."[5] Thus with the conditions under which the U.S. would engage in multilateral and complex contingencies established, a rudimentary framework to inform which departments and agencies would be responsible for what actions was refined. Additionally, a generic outline of what specific issues needed to be coordinated across agencies was generated which can be considered the basis for what is now considered a whole of government approach to complex contingency operations.

As the Bush administration assumed office in 2001, the emphasis placed on "engagement" by the Clinton administration evolved into "security cooperation." Further refinement of previous interagency coordination for international implementation was placed on hold as the Bush administration dealt with the impact of attacks on September 11, 2001. Focus rapidly shifted to national defense, and more specifically homeland security and defense. Now, the prime considerations became how to define responsibilities in protecting the nation against further attack, both within our borders (domestic), and at a distance (internationally), and how to manage the consequence in the event another attack was successful. Understandably the focus on interagency coordination for international assistance shifted to how to coordinate responsibilities for homeland security and defense, crisis response, and consequence management. The guidance for this domestic coordination was generated by the Homeland Security Presidential Directives (HSPD-5)[6] and its companion document HSPD-8.[7] This guidance has become further developed during the Obama administration with his signing of Presidential Policy Decision (PPD-8) which established the National Preparedness System and further defined responsibilities, working relationships, preparedness goals and a series of national frameworks.[8] However, as much as the initial momentum of the Bush initiatives were sustained and refined by the current administration for security and national preparedness, the same progress has not been sustained by the U.S. internationally. This is a flaw that can be demonstrated by recent operations in Iraq and Afghanistan and the presidential efforts to make interagency coordination overseas more coherent.

In December 2005, the Bush administration, faced with an apparently deteriorating situation in Iraq and to a lesser degree Afghanistan, established the Office of the Coordinator for Reconstruction and Stabilization under the auspices of the Secretary of State (S/CRS) by executive order National Security Presidential Directive-44 (NSPD-44). This new office had three primary responsibilities: integrate all the various activities of the U.S. Government for reconstruction and stabilization efforts overseas, harmonize those activities with ongoing military operations, and create the capacity for a civilian surge in order to apply civil expertise in fragile or at risk states.[9] These initiatives would enable the United States to more coherently and effectively transform conflict management from the international community or assisting nation and agencies to those of the host nation. Further, these efforts, although focused specifically for solely reconstruction and stabilization, established (in concert with then-U.S. Joint Forces Command) concrete, detailed planning frameworks and templates for coordination across government departments, and agencies in the U.S. Government Draft Planning Framework for Reconstruction and Stabilization.[10] This guidance coupled with the proposed establishment of an Interagency Management System by the National Security Council Deputies Committee promised both substance in process and organization across government to permit appropriate coordination in determining policy, crafting strategy, and structuring coordinated implementation plans.[11] In our experience, both personal and from discussions with other national security professionals, these initiatives were met with mixed reception across established professionals, especially by the main proponents of the State Department and the Department of Defense. Now with the impetus of these initiatives for stabilization in Iraq and Afghanistan waning from national attention, further refinement of these important initiatives appears doubtful.

The operating environment during any given timeframe has an influence on the degree of urgency for collaborative efforts, both in the multinational sense as well as the U.S. unilateral sense. Although momentum began to wane as the U.S. withdrew from Iraq, then-Secretary of State Hillary Clinton resuscitated energy with her initial crafting of the Quadrennial Diplomacy and Development Review (QDDR) in December 2010. Among many aspects of unifying processes within the State Department and the U.S. Agency for International Development (USAID), this document moved the Office of the Coordinator for Reconstruction and Stabilization (S/CRS) and established the Bureau of Conflict and Stabilization Operations within the State Department organization that was to be headed by an Assistant Secretary.[12] To

support further development, the State Department recognized the effectiveness of comprehensive domestic planning efforts realized by the existing National Response Framework and current National Preparedness System and suggested a similar construct for overseas operations with a revised planning framework named the International Operational Response Framework (IORF).[13] The intention was that the IORF would draw the best from previous interagency efforts and establish a planning architecture that would improve a whole-of-government approach to overseas policy implementation as is described later and depicted in Figure 5. Unfortunately, the creation of an IORF has been limited to name only. Since the creation of the name in December 2010, no recognizable progress has been made to refine the means by which the interagency community can become more effective and coherent in its approach. Steps need to be taken before all momentum is lost amongst a disconnected group of bureaucratic stovepipes.

Gaps and Stovepipes

"Cylinders of Excellence" has been coined as a commonly heard term to define bureaucratic stovepipes in which each agency does well within its own purview, but does not have a mechanism for crossing into another agency's "swim lane". This is particularly apparent when discussing one of the underlying causes of challenges to interagency coordination. This phenomenon is a symptom of organizational differences with respect to how members of an agency get promoted and rewarded. The result is that when members of disparate governmental organizations are put together on an interagency team, their loyalty may very well remain with interests of their parent agency versus the interagency team. It should be noted here that an exception to this challenge to loyalty was the success of the Active Measures Working Group which was an interagency working committee formed to counter Soviet misinformation in the 1980s which yielded successful interagency policy formation and execution.[14] It can thus be argued that issues of high national interest can cause better synchronization at the policy level and, ultimately at the execution level, thus overriding intra-organizational loyalty barriers to cross-organizational coordination. Accordingly, the National Security Council cuts across agencies at the policy level while various other systems work towards coordination at a more day-to-day planning and execution level.[15] Examples of such systems include unified command staff elements based upon the Joint Interagency Coordination Group (JIACG) model and various interagency task forces such as Joint Interagency Task Force (JIATF) South[16]

and JIATF West to name a few. Oftentimes, however, the players from the wide range of U.S. Government agencies still find themselves "meeting on the ball field" for the first time in the midst of a crisis or impending crisis to implement policy.[17]

In order to avoid inconsistent serendipity of gathering dedicated professionals in crisis, mechanisms are needed with respect to monitoring steady state, day-to-day activities to alert nations of the impending need to respond. Numerous mechanisms have been suggested to detect, diagnose, and implement a whole-of-government approach to deal with crises and potential crises. Some examples of these mechanisms that have been applied (and many times not) are the Interagency Management System, the Interagency Conflict Assessment Framework (ICAF), the Strategic Multi-layer Assessment Program (SMA), and the National Response Framework (NRF).[18] Ryan suggests that the SMA and ICAF are good tools for situational awareness with respect to potential crises, but they do not provide the interagency team with the "ways" of realizing the "ends" with respect to national interests. Thus we have a gap among the triad of "ends", "ways", and "means." Both Presidents Clinton and Bush recognized this gap with respect to the "ways" of operationalizing our strategic end states utilizing our full potential of "means" or elements of national power through their respective presidential directives discussed earlier.[19] Hook suggests, as quoted by Miles, "[t]he State Department suffers a "chronic gap" between its ends and means. If anything, this gap was widened by the ambitious goals laid out in the QDDR."[20] Miles also suggests in regards to the provision of foreign assistance that stovepipes between the various organizations, processes, and budgets hamper the ability to provide aid in an efficient and effective manner.[21]

This begs the question that if institutions suffer this chronic gap between ends and means, then what about ways? Why reinvent the wheel, so to speak when there already exists a proven model in the form of the NRF. The proposed solution, the IORF, is a way to essentially provide an enterprise approach to the United States' Whole-of-Government method of coordination exercised in response to crises overseas. This overseas or international approach would be modeled on the NRF which has been successful domestically to centrally coordinate interagency efforts by assigning "lanes" to specific appropriate agencies (example in Figure 1). A variety of U.S. Government agencies and departments are assigned roles for response efforts to a domestic incident.[22] These roles range from an organization being designated lead agency (the organization held accountable for a particular incident as supported by other agencies), supporting agency, or coordinating element for each type of domes-

tic incident categorized as an Emergency Support Function (ESF) annex which essentially "describe the Federal coordinating structures that group resources and capabilities into functional areas that are most frequently needed in a national response".[23] ESFs identified to return stability to regions domestically after a disaster are similar to those needed to restore the situation overseas. The only difference will be assignment of the appropriate agencies—the functions remain the same. To add clarity to this parallel where the functions remain the same, an example is provided. If a natural disaster occurs domestically, FEMA is the ESF Coordinator for the associated response as supported by other agencies such as the Department of Defense where appropriate. Likewise, if a natural disaster strikes overseas and it is deemed in the interest of the U.S. to respond with assistance, the Office of Foreign Disaster Assistance would be the International ESF coordinator as supported by other U.S. agencies.

Figure 1. The National Response Framework Emergency Support Function #6

ESF 6—Mass care, Emergency Assistance, Temporary Housing, and Human Services ESF Coordinator: Department of Homeland Security and the Federal Emergency Management Agency
Key Response Core Capabilities: Mass Care Services, Public and Private Services and Resources, Public Health and Medical Services, Critical Transportation, Fatality Management Services.

Coordinates the delivery of mass care and emergency assistance, including:
    • Mass care
    • Emergency assistance
    • Disaster housing
    • Human services.

Source: *National Response Framework*, 2nd Edition (Washington, DC: Department of Homeland Security, May 2013), 33.

A domestic framework, however, may present some challenges when applied internationally. A nexus between the NRF and the United Nations (UN) Cluster system should be examined as foundational elements of the IORF. As both entities have been tested in real world responses such as with the NRF for Hurricane Sandy domestically in 2012[24] and the UN Cluster Systems for the 2010 Haiti Earthquake response,[25] the overlap is relatively easy. One key element that these two coordination mechanisms have in common is the idea of core functions or what the NRF similarly calls core capabilities, driven by strategic direction. The NRF describes "the response core capabilities are a list of the activities that generally must be accomplished in incident response regardless of which levels of government are involved."[26] Similarly, the United

Nations Office for Coordination of Humanitarian Affairs (OCHA), the coordinating element for the Cluster System, has core functions,

> *that OCHA carries out in support of its mandate, all of which pertain to OCHA's role in humanitarian preparedness and response. These primary functions go beyond the purview of any single OCHA Headquarters branch or section, and are generally carried out in tandem by country and regional offices.*[27]

Additionally, OCHA recognizes the concept of "whole of organization" much like the "whole of community" concept in the NRF.

It can be argued that there are parallels between the Cluster System and the NRF, thus making it logical to consider the incorporating of relevant attributes of each into a framework for the U.S. Government to operate in a comprehensive manner overseas. Accordingly, reinventing the wheel with respect to interagency coordination in a multinational setting would not be cost effective or efficient when a successful framework exists domestically. The State Department and USAID recognized that a model that works effectively with respect to interagency coordination is domestically within the National Incident Management System.[28] This framework is used to respond to domestic incidents in a comprehensive, multi-stakeholder manner by use of an interagency team, thus providing a manner to fill the "ways" gap.

These two organizations proposed that the IORF would fill this gap with respect to international operations, but how does one take a domestic tool and apply it to a foreign country? Is it reasonable to expect acceptance and knowledge of a United States' domestic system by international partners?

Embracing Cross-Cultural Complexity

Some key elements that need to be considered when applying a domestic model to an international arena are differences in culture (organizational and national), as well as legal, such as international law and relevant agency authorities. Legal considerations are of concern, but could potentially be a topic of discussion beyond the scope of this article. Accordingly, cross-cultural understanding is an essential element of living in a globalized world, adding another layer of complexity to the application of a U.S. domestic response framework utilizing elements of national power to an international situation with multinational participants. Additionally, governmental, in-

tergovernmental, and non-governmental organizations are faced with humanitarian and social challenges associated with living in an interconnected world. Accordingly, it can be argued that any situation (kinetic, humanitarian, or otherwise) involving human beings of varied cultural backgrounds, coupled with the internal and external systems of a society, leads to complexity. This is a foundational element of the Interagency Conflict Assessment Framework (ICAF), a framework that has been applied to international societies in an effort to determine risk of violent conflict.[29] Thus it is essential for organizations responding to that type of situation to have what Livermore refers to as "cultural intelligence," the cultural awareness and sensitivity to understand a non-native situation, in addition to their own good ideas and energy.[30]

Organizational cultural norms must also be considered when applying elements of national power to resolve an international situation. This view is also supported by Edgar Schein in his book *Organizational Culture and Leadership*.[31] Schein identifies three levels of culture that are essential to analysis of an organizational culture: "observable culture, shared values, and common assumptions."[32] The difficulty of analysis increases as it moves from one level to the next, with observable culture containing the most obvious indicators and common assumptions of a culture requiring deeper immersion to analyze.[33] The ability of those who respond to crises to assess the host nation culture as well as the foreign culture of a disparate international community attempting to assist could greatly mitigate friction and speed response. If such cultural knowledge was ignored, it could increase friction, build animosity or ambivalence, therefore slowing the relief.

This is an element that one must recognize prior to engaging with persons of another culture or organization, whether it is socially, politically or commercially oriented or based. In an effort to move forward in recognizing organizational cultural differences, Davis and Paparone conducted a quantitative study on the organizational cultural differences between U.S. Military Officers and Department of State Foreign Service Officers, entitled, *Departments of State and Defense Relations: Are Perceptions Important?* They "determined that not only would an intra-cultural assessment be insightful (how one views one's own organization), but also that an inter-cultural assessment (how one views the other's culture) would also be fruitful."[34] They concluded that "there seemed to be considerable overlap in shared values with this population, which reflects more integration than differentiation."[35] Accordingly, cultural norms must be considered when translating a domestic response framework to an overseas incident of national interest.

Cultural norms, those shared with people of the same cultural background, are categorized as similarities that exist in a variety of cultures (the norms will vary from culture to culture, but all share a set of norms—what is considered right and what is considered wrong).[36] In any situation that necessitates persons of disparate cultures to work together, an understanding of what values define the cultures involved is an important aspect of enabling a sense of mutuality when working in a comprehensive approach scenario. Shared values can be described as cultural norms which can vary widely. These rights and wrongs are reflected in value systems as well as how those value systems manifest themselves in cross-cultural situations, whether considering inter-organizational cultural differences or international cultural differences.

The aforementioned ICAF model takes these systems into consideration and concludes:

> *The results of an ICAF can also be used by planners and others to inform a whole of government (from a U.S. perspective) approach to engaging in a country or region to minimize conflict and increase stability. Currently, most all intervention planning and design, military and civilian, is conducted from within a problem/solution frame. Untested, as of yet, is the enormous potential for employing the results of an ICAF in a planning process also predicated on a complex, adaptive system approach rather than the usual problem/solution approach.*[37]

This demonstrates the potential utility of cross-cultural intelligence with respect to applying the model of a domestic response framework to international operations, but this has yet to be applied by the United States in an examination of an actual international crisis, such as the recent Haiti earthquake. However, as ICAF closely resembles the United Nations Cluster System, an examination can take place of its role during an operation to show how the ICAF system would operate.

Clusters that Make Sense

A specific area that requires multifaceted coordination during overseas operations is humanitarian assistance. Jensen quotes Boin, et al. by coining their phrase "coordination is the Holy Grail of disaster response."[38] OCHA recognized the importance of this 'Holy Grail' after the humanitarian disasters in Darfur (mass atrocities of civilians in Sudan) and the Indian Ocean (Operation *Unified Assistance* which re-

sponded to a massive tsunami) during the 2004-2005 timeframe.[39] The system essentially revolves around a relief coordinator and resides on the foundation of six goals: 1) facilitate the coordination between the cluster members; 2) encourage joint working; 3) ensure that responses are in line with existing guidelines and standards; 4) collate and share information; 5) identify gaps in the response; and 6) stand in as the "provider of last resort" when there are no other options.[40] Through the experience mentioned above and the desire to achieve foundational goals in humanitarian assistance, the United Nations initiated use of a cluster system. The Cluster System essentially groups common efforts into sectors such as food, shelter or protection, for example, and assigns a lead agency to each area of effort.[41] This system was operationalized at the outset of the Haiti earthquake of 2010 and was deemed to be successful at the operational level, but fraught with coordination challenges at the tactical level.[42] The United Nations coordinator for humanitarian assistance recently issued an evaluation of the effectiveness of the Cluster System in Haiti, concluding that:

> *coordination and leadership were challenges from the beginning in the chaotic circumstances where much of local capacity had been destroyed or disrupted, and thousands of humanitarian and faith-based organizations arrived on the scene to provide relief to the affected communities. The response to the earthquake in the first three months was successful in quickly mobilizing aid, setting up cluster coordination and mobilizing important resources in the form of funds, military assets and staff.*[43]

Nevertheless, the Cluster System does take into account both a multifaceted approach that intends to incorporate both local and external stakeholders in a humanitarian assistance operation.

The Clusters reflect areas where significant coordination challenges exist to include "the lack of a global vision, different approaches by [non-governmental organizations] and the [United Nations] system, lack of agreement on how to use limited resources, insufficient common knowledge of stockpiles and overloading the humanitarian coordinator."[44] After applying this cluster system in several different operations the cluster activities tended to reoccur. Presently, there are eleven clusters (see Figure 2), each with a designated global lead.[45]

Figure 2. How the cluster system works

"Cluster Coordination," *United Nations Office for Coordination of Humanitarian Affairs*, accessed March 2013, available at <www.unocha.org/what-we-do/coordination-tools/cluster-coordination>.

At the center of this hub and spoke "cluster" resides the Humanitarian and Emergency Relief Coordinator who receives guidance and support from OCHA, as well as coordination assistance between clusters.[46] As the reader can discern, this is very similar to the NRF discussed earlier where the emergency manager coordinates activities across 14 Emergency Support Functions (ESF). If the United Nations clusters are presented along with the NRF ESFs the similarities are striking (Figure 3). Some cluster and function pairings are almost identical.

Figure 3. Comparing UN Clusters with NRF ESFs

UN CLUSTER	U.S. NRF ESFs
• Protection • Food Security • Emergency Telecommunication • Early Recovery • Education • Sanitation, Water, and Hygiene • Logistics • Nutrition • Emergency Shelter • Camp Management and Coordination • Health	• Transportation and Infrastructure • Communication • Public Works and Engineering • Fire Service • Emergency Management • Mass Care, Housing, and Human Services • Resource Support • Health and Media Services • Urban Search and Rescue • Oil and Hazardous Materials Response • Agriculture, Natural Resources • Energy • Public Safety and Security • Recovery and Mitigation (superseded National Disaster Recovery Framework) • External Affair

The challenge remains, however, who will be at the hub for coordination overseas as the U.S. Department of Homeland Security is technically at the hub for coordination domestically? Or is that really an issue? Everyone with a common goal wants to coordinate to get to a common end state, but not everyone wants to be "coordinated" by an outside entity with disparate organizational cultural norms.

Way Ahead–Taking the Home Game on the Road

Challenges abound when trying to take a response framework used at home to international locales. These include everything from cultural differences to authorities and international legal restraints. It is suggested here that the U.S. agencies and departments that typically operate overseas should leverage existing coordination mechanisms, while at the same time taking the NRF on the road, so to speak, by

using what works as a domestic incident response model and using it for incidents of national interest outside of the U.S. border. Note that the tasks identified within ESF 6 for Mass Care, Emergency Assistance, Temporary Housing and Human Services used domestically would be the same tasks which would need to be accomplished in an international crisis. The only change needed would be to identify the appropriate government agency that has authority to act overseas. In this case it would likely be USAID and their Office of Foreign Disaster Assistance. Similar cases can be made for most of the 14 identified ESFs found in the National Response Framework Annexes: 1) Transportation and Infrastructure; 2) Communication; 3) Public Works and Engineering; 4) Fire Service; 5) Emergency Management; 6) Mass Care, Housing, and Human Services; 7) Resource Support; 8) Health and Media Services; 9) Urban Search and Rescue; 10) Oil and Hazardous Materials Response; 11) Agriculture, Natural Resources; 12) Energy; 13) Public Safety and Security; 14) Recovery and Mitigation (superseded National Disaster Recovery Framework); 15) External Affairs.[47]

Joint military doctrine examines lines of effort when discussing the approach to be planned in an operation and defines them as a line that "links multiple tasks and missions using the logic of purpose—cause and effect—to focus efforts toward establishing operational and strategic conditions" and states that "they are a particularly valuable tool when used to achieve unity of effort in operations involving [multi-national forces] and civilian organizations, where unity of command is elusive, if not impractical."[48] It seems logical that if the military has a line of effort that identifies tasks, which if successfully completed leads to the outcome of restoring essential services, then identification of similar tasks likely would be undertaken by whomever is the lead agency for an international response that involves restoring essential services should the affected nation desire assistance. Likewise, the United Nations Cluster System has several sectors (emergency shelter, health, and sanitation, water and hygiene) which have the same intent.

A possible model for linking the U.S. elements of national power with the capabilities of the international community is depicted in Figure 4. This essentially shows unity of effort with respect to the interests of the affected nation and of those nations providing assistance by creating a framework that is based on an international system but combines the planning models for both national domestic response and military operational approach planning. This process would work in a manner similar to the NRF, but reflect the roles associated with overseas operations. For example, the country of concern shown in figure 4 experiences a crisis (human-

itarian or otherwise) that causes it to be overwhelmed. If it is a disaster and the U.S. Government is asked by the affected nation to respond unilaterally, the IORF would be activated and the U.S. Agency for International Development/Office of Foreign Disaster Assistance (USAID/OFDA) identified as the lead federal agency. The efforts of the supporting and supported agencies would need to be translated from the domestic model (as found in domestic Emergency Support Functions (ESFs)) to an international model using proposed International Emergency Support Functions (IESFs). Each function expected to be supported by the U.S. Government is identified in a similar manner. As an example, the ESF used domestically for mass care seen in Figure 5, emergency assistance, temporary housing, and human services [with the Department of Homeland Security/Federal Emergency Management Administration as the lead federal agency (DHS/FEMA)], could be converted to an international version with OFDA acting as the lead federal agency with other agencies in supporting roles. This alleviates any sort of new construct of needing one overall agency for all international incident management, as this is where the friction often lies with interagency coordination.

Figure 4 Proposed IORF Model: International, Domestic, and Military Frameworks
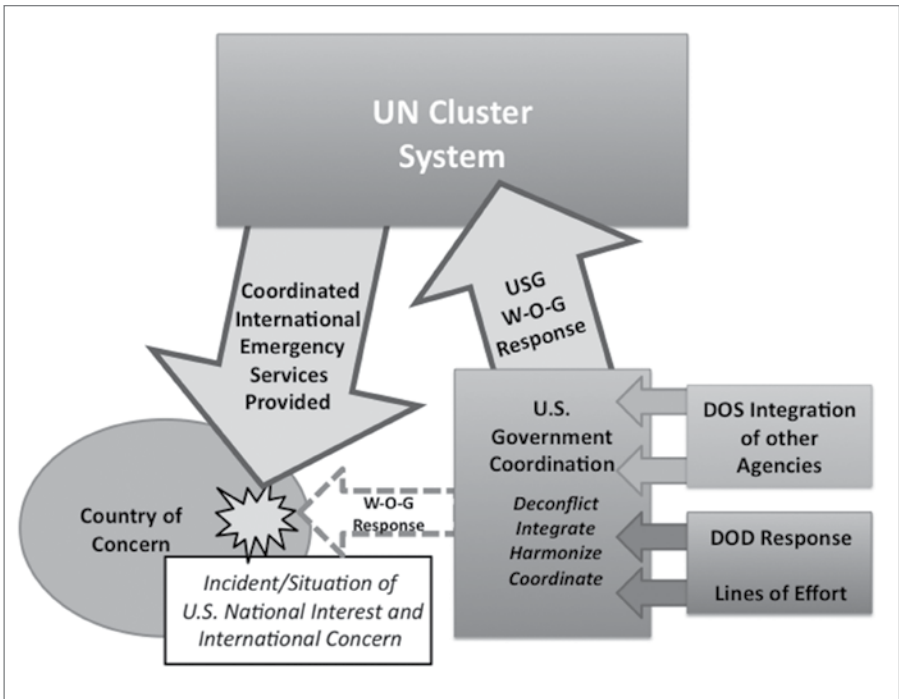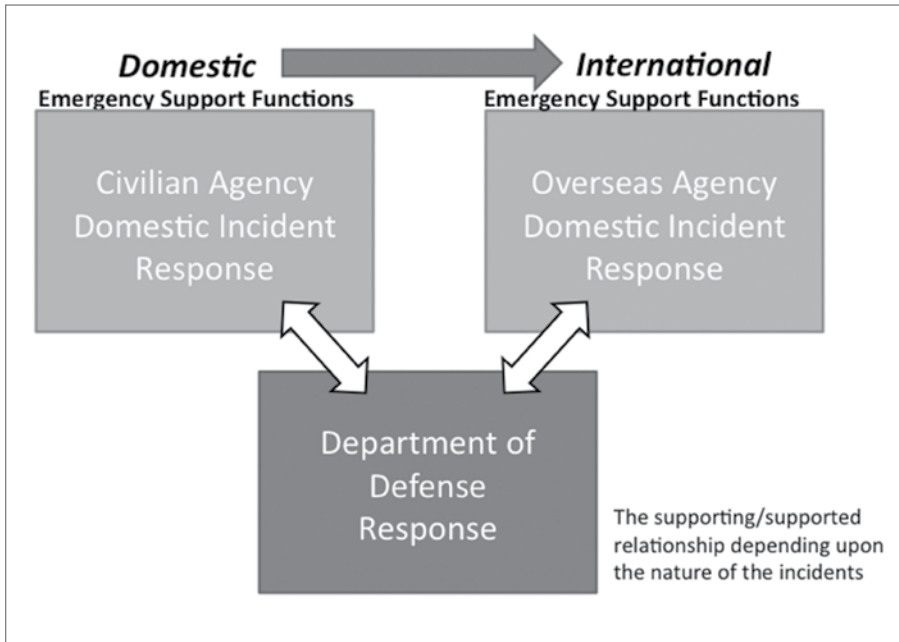
Figure 5. Proposed IORF Model: How the IORF Would Work—Translating Domestic Response to International Response

If the Department of State, as it refines its consideration of the proposed IORF, used the ESFs of the NRF as a basic structure to build detailed planning templates to implement policy as they designed in draft planning frameworks in 2005,[49] then a way will have been found to fill the persistent gaps between stovepipes. This mechanism would assist in filling the gap between efforts of nations, the gaps between agencies within contributing nations, as well as coordinate with and possibly integrate capacities of non-governmental organizations. If implemented in this manner, those departments and agencies who routinely respond to domestic emergencies will more easily respond to a request to assist in an international crisis. Additionally, if the IORF reflects the present United Nations Cluster System, then this will facilitate transition from a U.S.-led response to an international crisis to a multinational/ multilateral response. By using an internationally recognized framework upon which to base a framework for a U.S. response overseas, the State Department assists all relevant departments and agencies, as well as demonstrates that the United States is a "team player" and need not insist on its "made in the U.S." brand solution among its international partners.

Catastrophic natural disasters, turning out abusive regimes, and fragile states not capable of providing the bare essentials to their populations will always be with us. The United States has demonstrated over many operations that it can help to make a difference. However, it seems at each turn that the same lessons are learned when attempting to coordinate across departments, agencies and nations. There have been sound initiatives proposed and in many cases tried over the last decade to create consistent frameworks to address these recurring coordination challenges. In many cases they have become effective, as in the framework the United States has created to answer domestic emergencies. The gap persists, however, in the manner in which the United States coordinates response to extraordinary events overseas. Proposals have been initiated, but the gap remains. It is time to move rhetoric into concrete frameworks so that in the rush to respond to the next crisis the United States can respond quickly, effectively, and willing to either lead or join the world community in assisting in alleviating the hardships of the innocents whose nation is unable to provide for the necessities of life.

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Chapter 18

Transforming Praxis for Strategic Leader National Security Education

Cathy Downes

In the United States, over recent decades, the strategic-level institutions for national security education have applied primarily sustaining innovation strategies[1] to their models of educational praxis.[2] Such innovations have included for example, the embossing of programs with the imprimatur of Joint Professional Military Education and the accrediting of these programs with graduate degree status.

There has been a proliferation and up-labeling (schools become colleges, colleges become universities) of specialized schools and outlier campuses (Joint Special Operations University and the National Intelligence University, for example). Most of these have sought to imitate the educational models of the mainstream War Colleges.[3] More recently, in some cases, hard-copy correspondence school-style programs have been reinvented as first-generation e-learning replicas of the face-to-face (F2F) classroom experience.

Despite a pressuring array of challenging changes, few of these innovations have altered materially the current praxis of education, and the educational model itself. Rather, the defense educational teaching model found in most of these institutions (lock-step curricula, teacher-centric, small seminar sizes, subject-matter-expert lead faculty and assistants, focus on faculty-led "Socratic" discussions, burdens of readings, VIP guest lectures, and exercises and group projects) has been defended skillfully. Institutional strategies have been applied to cherry-pick innovations that preserve and protect this model and see off those that threaten it.[4] This is similarly the case with regard to content change controls and oversight processes for these programs that have focused more on "patch" management and "load balancing" than leading policy on new approaches to learning.[5]

Yet the external context for educating strategic- and enterprise-level leaders is changing rapidly as are the leadership demands of that operating environment. More-

over, many of these changes challenge the efficacy going forward of current models of education.

Defending existing educational models as right and ready for the future by pointing to past performance (against a fairly selective basket of outcome metrics) is increasingly an overreach. This is particularly so when it is expected that educational models, optimized for conditions of stability and stasis admired and refined in the Industrial Age, will be just as effective in the volatile and mobile Information Age. The "don't muck with success" and "if-it-ain't-broke-don't-fix-it" logics are becoming increasingly wanting in their power to convince.

In the present algorithmic age of exponential change, waiting until something is demonstrably "broken"—and there is near universal agreement that it is broken—to catalyze change is hubris. Moreover, it is most remiss when the subject is that of educating leaders whose decisions and advice will have major impacts upon not only the lives of military personnel, but whole populations.

This chapter focuses on four areas of change that have an impact upon the content and praxis requirements for national security strategic leader education. The second part of the chapter reviews four changes in mindset needed for transforming U.S. national security educational praxis to meet the professional development needs of future national security military and government leaders.

Catalyzing Trends for Transformational Change in National Security Education

There are at least four factors propelling change in the current educational models for national security education. These drivers include significant changes in the leadership demands of the national security environment and our understanding of the demands of leadership at the strategic level, changing student demographics, the availability and impact of new technologies in reshaping work and learning environments, and the need to find productive ways of accommodating divergent cultural values and viewpoints that impede organizational adaptation.

Leadership Demands of a Changing National Security Environment

Most clearly, the national security environment is undergoing fundamental change, morphing in overall complexity, operational domains, powers, participants and protagonists. These changes impact the performance demands placed upon military and civilian national security leaders.[6] In turn, these demands in-

fluence the knowledge and competencies such leaders will require to be effective in the future.

Acknowledging a relationship between changes in the leadership environment and leadership education may seem obvious but nonetheless it is contentious. One school of thought holds that there are historical verities that govern and explain the dynamics of international security relations and most particularly war, its starting, execution and termination. Each chosen period or event of history is seen to reveal enduring principles. This approach rests on the assumption that, for the most part, broadly similar security challenges and situations will occur in the future that have already been encountered in the past.

Therefore, lessons from these historical encounters convey. Education centered on these principles will prepare students to recognize and apply them in events of history as they unfold. Under this approach, leader education curricula is designed to help students understand these historical truths as a lens through which to evaluate current events and envision future solutions and interventions. Such historical presentations are complemented by, and interpreted through, broadening studies in economics, diplomacy, and politics.

A second school of thought questions whether the explanatory power of past interventions and actions in international security relations is any longer sufficient for educating future leaders. In some critical ways, the current, and what can be conceived of future, security environments differ from past experiences. These differences are such that explanation by reference to earlier occurrences could prove misleading and invalid. Resting too heavily on understanding past experiences as a principal guide for the future may be an increasingly high-risk strategy. In many cases, there may not even be relevant historical lessons to draw upon.

For example, we use the term "the Information Age", marveling at its technological advances. Yet, in the second decade of the 21st century, we have only taken "baby steps" in understanding and leveraging the Internet's growth, power, offensive/defensive, and creative/destructive potential. Quite simply, the Internet is a fast-moving, fast-evolving target and it does not fit now and expanding beyond many existing national, international and corporate models of interaction.

Eric Schmidt and Jarod Cohen open their recently published book, *The New Digital Age*, with this observation:

The Internet is among the few things humans have built that they don't truly understand. What began as a means of electronic information transmission…has transformed into an omnipresent and endlessly multifaceted outlet for human energy and expression. It is once intangible and in a constant state of mutation, growing larger and more complex with each passing second. It is a source of tremendous good and potentially dreadful evil….The Internet is the largest experiment involving anarchy in history. Hundreds of millions of people are, each minute, creating and consuming an untold amount of digital content in an online world that is not truly bound by terrestrial laws…This is the Internet, the world's largest ungoverned space.[7]

We are advancing deeper into the Digital Age that does not have a full suite of historical precedents. Moreover, it is an Age that is morphing too quickly for historical precedent to get a second chance to be repeated. Unprecedented levels and density of connectivity in global, regional and local events are disconnecting previously explained casual relationships.

We are shifting from a world of comparatively few significant actors who were capable of creating global, regional and local effects because they broadly adhered to small set of conventions. By contrast, the contemporary world is characterized by a growing multiplicity of new actors. From an all-time low of 56 in 1879, the world's number of independent countries has expanded to 192. And that is not even starting to enumerate the networks of non-state actors. At the same time, the conversion rate of single-actor-led states to democracies has changed both international and national decision-making. Previously disempowered are becoming empowered. Previously powerful are being weakened.[8]

In an increasingly fragmented but globally connected world, it is becoming increasingly problematic to achieve necessary alignment between territories and issues affecting local, regional and global security. With more and more actors demanding a voice and able to exercise dissenting votes, it is also increasingly challenging to achieve consensus for effective action.

The strategic-level operating environment is also evolving to include new types of protagonists. For example, understanding how historically conventional forces deliver kinetic power must be now complemented by consideration for the strategies and tactics of insurgent non-state actors. Yet, this is the recent past. Mass voice-of-

the-people protest mobilizations and small group and individual whistle-blowing hacktivists are now the newly joined participants. It is highly likely that before mitigating strategies are evolved to manage the power and impact of these types of forces, we will see the parachuting in of at least two more protagonists—the serious cyber warriors with the capability to cause systemic damage, and the rogue bio-geneticist(s) with the capability to cause human systems collapse.

These changes also reflect another dominating characteristic of the evolving strategic landscape: the circling and embracing sets of technological advances—information, biogenetics, robotics and nanotechnology—that are individually, and in combination, experiencing exponential growth rates.

Until recently, these areas of technology have been on the lower end of the exponential glide path on a linear scale. Now, they are hitting "the knee of the curve" where growth kicks into high gear. The dynamics of this are explained starkly by Ray Kurzweil:

> An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense "intuitive linear" view. So we won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today's rate). The "returns," such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth. Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity—technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and nonbiological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light.[9]

There are almost too many significant implications flowing from these trends for government policy makers to contemplate, let alone design effective hedging, leveraging, surfing or leading strategies. To give one example, defense planners justify generational cost growth in weapons and equipment platforms by planning long-life designs where initial costs can be amortized over a long period of time. Particularly in aircraft carriers, submarines, for example, life expectations run into the decades.

As it stands the United States and China are investing in building new and replacement aircraft carriers with 50-year life expectations in an era where "100 years

of progress….will be more like 20,000 years(at today's rate)."[10] Will these investment choices prove to be a substantial opportunity cost if the next war (beyond the one we are already in, in "cyberspace") is inside the human body in the form of bio-genetically modified, nanite-sized waves of attackers? The distance between science fiction and science fact is shrinking at a speed arguably few of us are prepared for.

This Algometric Age brings into question fundamental assumptions about strategy-making, strategic planning, and capability acquisition amongst other matters of national governance. Precedents for behavior based on linear evolutionary paths in exponential times risk applying what worked in the past to situations that will increasingly bear no relationship with that past.

These features, and others of the evolving international and domestic security environments, have all the hallmarks of "wicked problems" whose distinguishing properties were defined by Rittel and Webber as early as the 1970s:

- There is no definitive formulation of a wicked problem.
- Wicked problems have no stopping rule.
- Solutions to wicked problems are not true or false but better or worse.
- There is no immediate and no ultimate test of a solution to a wicked problem.
- Every solution to a wicked problem is a one-shot operation because there is no opportunity to learn by trial-and-error, every attempt counts significantly
- Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions.
- Every wicked problem is essentially unique.
- Every wicked problem can be considered to be a symptom of another problem.
- The existence of a discrepancy representing a wicked problem can be explained in numerous ways.[11]

While the concept of wicked problems is intellectually delighting, it also comes with warning labels. Two are important here. First, because each wicked problem is unique, as Rittel and Webber observe, "using what worked elsewhere [or previously] will not generally work for wicked problems."[12] This marries with the idea that we are moving further into an era where the past does not necessarily provide the best advice and guidance for preparing for an encounter with the future.

Resting much of national security senior leader curricula upon historical, political, economic, and societal precedents and cases may serve accreditation goals and

speak to faculty strengths. However, this weighting needs re-evaluation given that future leaders are more likely to need to cope with wicked problems where there are few relevant precedents.

Second, a critical but routine failing in strategy work identified by Richard Rumelt in *Good Strategy, Bad Strategy*, is that of bad problem diagnosis. Having poorly diagnosed the problem, almost inevitably, unsuitable collections of instruments, interventions, actions are compiled into bad strategies.[13]

The most usual misdiagnosis is a identify problems as "tame" rather than wicked. In contrast to wicked problems, tame problems are comparatively easy to define and definitions have stability. Tame problems can be resolved. They are usually amenable to deductive reasoning processes and solutions can be evaluated for their success or failure. The solutions found can be repeated to achieve the same outcome.

There are many reasons why this misdiagnosis is so common. One reason that stands out as important and relevant to strategic leader education is *a priori* learned behaviors and how those behaviors were learnt. The current models of education, and the packaging and presentation of subject matter, were designed for the Agrarian, and modified for the Industrial Age. Scientific and industrial information and knowledge have primarily evolved and been shared through the solving of tame problems.

Ironically, in a way, the big data movement has come of age empowered by information technologies but catalyzed fundamentally by the inexorable belief that more (and hopefully better) data is what is needed to solve seemingly intractable problems. In this way, rather than helping leaders understand the dynamics of wicked problems, information technologies often have been embraced as tools for turning wicked problems into manageable tame ones.

This is even more so the case in military affairs, where for example, in the American military experience, the application of scientific method to military affairs found its culminating articulation in the mass mobilization of Industrial Age warfare of World War II. The clarity, precision, repeatability of its formulas has always been seductive to military organizations and leaders who must carve out results in environments most accurately characterized by Clausewitzian concepts of "fog" and "friction."

As a result, particularly U.S. military students come to the senior defense schools highly socialized in a military culture that, to varying degrees, is steeped in scientific and quantitative methods of problem-solving. From early education, through military experience and schools, students have been rewarded and recognized for convergent, analytical styles of thinking and decisionmaking.[14] However at the strategic level of na-

tional security and Agency/Department leadership, few problems are so amenable.

To some extent the need to help students develop their wicked problem strategic thinking skills (divergent, creative/design, visual, futures and systems thinking) has been recognized in changes (made nearly two decades ago) to the War Colleges curricula—for example, the VUCA (Volatility, Uncertainty, Complexity and Ambiguity) appellation for the contemporary strategic environment.

Also, it is maintained that the Socratic Method, as practised in these schools, provides a highly effective way to help students test their own assumptions and preconceptions and thus improve their understanding about the fundamental nature and connections of events and actors in national and international security. At the same time, it could be suggested that such methods are more focused on improving students' critical thinking skills than those skills more directly related to dealing with wicked problems.

The larger question raised however must be: is this enough? The widespread application of tame problem thinking and solutions to an expanding series of wicked problems of national security strategy formulation, international security relations, interagency collaboration, and Department/Agency level transformation is almost daily evidenced. All other factors being equal, either insufficient numbers of students are receiving a transformative educational preparation for strategic leadership to make a difference, or the education students are receiving is not sufficiently transformative in developing their abilities to identify and craft effective strategies for addressing the wicked problem-set which is a defining feature of the contemporary and future strategic domain.

Learning Demands of Generation X, Y and…Zee!

What will the national security leader students of 2015-2020 look like? Will they be any different from current or past students? If they are, will it matter in terms of educational praxis? For the graduate-level adult learning situation it is assumed that the master/pupil model is inappropriate. Adult learners come to each learning situations with their *a priori* educational and professional experiences, a defined sense of self, and better or poorer learning disciplines. In turns of how to best shape the learning situation, it is accepted that these prior learning experiences (both formal and informal) matter and should be an influence upon what is taught and how it is taught.

Today's national security leader education students grew up in the latter half of the Cold War and entered the workforce as military officers or public sector civilians

around the time of the fall of the Berlin Wall. Their formative professional experiences occurred during the New World Order decade of the 1990s with hard- and soft-landing break-ups of the Warsaw Pact countries, genocides in Africa, an optimistic but ill-equipped interventionist United Nations, and a last-man standing unipolar United States national security posture searching for force-structuring principles in a non-peer Post-Cold War. For today's students, their professional lives have also been bisected by the rupture created by the terrorist attacks of September 11, 2001, and the follow-on wars in Afghanistan and Iraq. For the majority of these students, they had concluded most of their formative educational experiences before or during the early start-up events of the Information Age. In these experiences there is a mixture of great stability and certainty on the one hand, and a transition to conditions of volatility and ambiguity on the other.

It is difficult to avoid generalizing generational profiles, so with all the usual caveats about over-simplification, what formative experiences might shape our future strategic-leader aspirants entering our institutions over the next 8-10 years?

First off, these students were only 8-10 years old when the Cold War ended. They were only completing undergraduate education at the time of September 11. Their principal professional experiences have occurred through the years of the Afghanistan and Iraq Wars. Operational experiences in these two campaigns will not only be limited primarily to military students; more DOD civilian executive students (either with or without previous military experience), and students from other national security-related agencies and departments will come to the senior service and national security colleges and schools with worldviews.

Our students in the future will be increasingly the product of the first and second waves of the Information Age (characterized as first, the productive and processing web and shift from mainframe to PC; and second, the social and collaborative web and the shift from PC to mobile devices). Their learning preferences, mental models, values, priorities and habits have been fundamentally shaped by the Information Age. Given what tests and evaluations are revealing about the learning experiences of these generations, it is evident that technology advances are having a greater shaping effect on the values, expectations, goals and aspirations of these 21st century generations who could be national security education program students at earlier ages than our current students.[15]

Another generational profiler for the second decade Millennial generation, Larry Rosen provides some interesting perspectives on the behaviors of this generation

more fully formed by and immersed in the evolving Internet and Web 2.0/3.0. He calls them "connective, collaborative constructionists," equipped with digitally-empowered media consumption, multi-tasking, e-communication, socializing habits, writing skills.[16]

These are generations who have grown up with, and will continue to learn through, ever more sophisticated immersive virtual environments. In these, students complement "second-hand" reading and discussion-based learning with "first-hand" exploration, discovery, testing experiential opportunities. Moreover, just as in flight simulator training for airline pilots, they can re-play their experiences. They create and engage with collaborative teams to achieve goals that challenge and motivate them. As Philip Zimbardo, Professor Emeritus of Psychology at Stanford University remarked:

> *Think of the formative experiences of General Y—by the time a man is 21 years, he has spent 10,000 hours playing in video games alone—are immersed—live—in worlds that they create; there is a perspective that suggests that their brains are being re-wired by these experiences, and will have increasingly difficulty in fitting into traditional analogue classrooms. Learning is boring for these folks when they have no control over the curriculum. School is set up so that students control nothing.*[17]

If we examine the current educational praxis of strategic level national security education there are few if any technologically-advanced immersive learning environments. In fact, even today, while national security education students can build, or participate from their own personal computers in game-based learning, incapacitating and counter-productive layers of information security restrictions make designing, creating and sharing such learning contexts in the War College environment difficult to impossible.

For future students who have swelling expectations of customizing or personalizing their portfolio of learning experiences, they will encounter programs of study that are today 80-90 percent predetermined down to the level of individual session learning objectives, required readings, and issues for consideration. With few exceptions, current levels of digital literacy amongst extant national security education faculty are likely to be quickly exceeded by their in-coming students.

Technology Drives Learning Environments

In the past, educational technology advances were as "exciting" as moving from

the chalk blackboard to the acetate transparencies on an overhead projector and PowerPoint slides on a screen. The scale, creativity, and opportunities created by current and projected advances in e-learning are shifting the relationship from one technology as a back office support to the ways in which educators currently deliver content to their students, to a force that creating and leading the evolution of educational models.

Regardless of level (K-12 to undergraduate- and graduate-level), educational institutions designed in the Industrial Age has entered a space that can only be characterized as a "clash of civilizations." Two models of education, one well-formed, tested, experienced, mainstream adopted, and the other, emergent, evolving, still-forming, embraced by early adopters are now in play.

This is creating tensions in virtually every aspect of the educational experience, be it from the perspectives of students, teachers, administrators, employers, and parents. Relationships between learners and teachers are changing. The processes for generating and sharing new knowledge are shifting. The pedagogic value-add, roles and skill-sets of educators are being re-examined in light of exponential changes in the accessibility of information and knowledge. The operating model of universities themselves is being challenged.

While some might see these claims is as hyperbole that should be treated as an excitable child and suitably damped down, there is growing evidence that university education as a sector is in the process of being disrupted after ten centuries of stolid stability only reshaped once in the late 19th century to meet the needs of the Industrial Revolution. As we enter the third maturing decade of the Information Age, there is increasing pressure for universities to transition expeditiously out of industrial era practices, to move rapidly to embrace and indeed create learning processes more suited to upcoming generations of Information Age learners.

First-generation, let alone second-generation, technology-enabled educational practices and approaches are being critiqued severely by mainstream academic communities as "cheap", "low quality", "great for training but not for education", etc.[18] Existing practices are put forward as high quality and superior and worthy of their premium resource price. Sadly, this is the usual behavior seen in economic sectors about to be ruptured by new entrant innovators, recognized in the cycle of disruption defined by Clayton Christensen's *Innovator's Dilemma*.[19] This defense of extant practices often ensures that mainstream providers are culturally unable to adapt their practices and have difficulty in experimenting, innovating and adopting new, more value-add alternatives.

While technology is now leading out across a number of fronts that influence educational possibilities, two of these areas are considered in the early adopter coming into mainstream category.

Over the last five years, significant developments summed as Web 2.0 have been generating innovations in online and F2F/Online (blended) learning opportunities. These have included:

- Low-cost, low-entry barrier collaborative online infrastructures—"Wikinomic" style—opportunities for student/educator co-creation of content, peer-to-peer exchanges and data/information/knowledge sharing.[20]
- The emergence of the "social web" and other aspects of Web 2.0 such as blogging, social media outlets, information repositories and galleries.
- Creation of new types of web-enabled learning objects and spaces (immersive games, infographics, videos, class-flipping, etc.).

More recently, in what is now becoming typical rapid exponential order, we have seen the emergence of Massive, Open, Online Courses (MOOCs).[21] These courses are proving to be the latest battleground for the future of university educational models.

The opportunities for new approaches to learning are expanding rapidly. One of the features of these new approaches that is a narrowing the divide between "technologists" (Ed-Geeks), and "lay" subject-matter-expert faculty. The more collaborative, intuitive interfaces of Web 2.0 technologies are facilitating and supporting the growth of faculty experimenters. These innovators are developing more learner-centric, personalizable, and adaptive learning spaces and objects that could well be better suited to the wicked problem strategic thinking challenge, and changing student demographics.

An Educational Clash of Civilizations

Strategic leader national security education also is confronting a number of cultural-level tensions. These stressors concern differing views about the fundamental nature, purpose, operating model, and even the structure of national security education institutions. The weight of argument is often finely balanced, and positions have to some extent become quite polarized between members of the internal community, as well as between internal and external stakeholders. As a consequence, a middle ground is difficult to find and is more likely to be dissatisfying to all rather than a position that all can move to.

While these tensions exist to varying degrees in all the War Colleges,[22] this list has been created principally looking how they have presented themselves at the National Defense University.

a. The balance of subject-matter-expert practitioner faculty members and military officer faculty, their credentials, and rates of turnover,
b. The separation of faculty into teaching and research roles versus the more holistic approach to faculty as teachers who also carry out their own research and scholarship as well as faculty who devote their time overwhelmingly to research,
c. The balance between standardization in curricula delivery to ensure that all students are treated equally, and opportunities for students to personalize and customize their learning experiences both within the institution and its components and with other external sources of education,
d. Different views about the balance of improvement (incremental changes to stable curricula) and innovation (new curricula, new methods) that should characterize the institution's responsiveness to external change.
e. The balance between "Socractic Method" teaching praxis and more learner-centric, learner-led methods.
f. Pressures for performance standards versus completion rates in grading, assessment and feedback of students.
g. Negotiating in, and weeding out—the design features of a strategic-leader educational institution—what is the optimal balance of civilian, corporate and military university features?

Changed Mindsets

Vice Admiral Art Cebrowski, as the founder of the Transformation Chairs Network, was motivated by his strong conviction that if you want to develop leaders who can lead transformations, you need to start with those who educate the leaders.[23] Four changes in mindsets are needed to address the change drivers affecting national security leader education.

First, *we need to rebalance at the enterprise and component levels "transitional" and "transformational" mindsets.* The transitional mindset, which focuses on perfecting solutions to Industrial Age tame problems, knowledge of what has worked well in the past, developing refined policies, processes, and specialized rule-sets to cover

anticipated contingencies, etc. needs to be less dominant. Given the nature of external changes pressing on national security education, carrying on refining and gardening the margins of curricula is unlikely to generate the needed scale and magnitude of adaptive change in the overall models of education for national security leaders.

We need greater emphasis on transformational mindsets, which place greater attention on sensing and understanding Algorithmic Age warfare, national security, and government transformation futures. It would also mean greater attention to matters, trends, innovations that empower and engine this Algorithmic Age. It focuses attention on sensing and sense-making to create possibilities for addressing wicked problems. Finally it would include opening up consideration, and even creation, of emerging approaches to educational experiences better future-fitted for our next generations of students and the operating environments in which they will be expected to lead.

Second, *we need to reset the mindset of seeing the military-centered Operational-level "Joint Warfighter" (Combatant Commanders) as the focus of strategic-level national security education.* National security strategic leader education and learning needs should be derived from, and focused on, the demands and dynamics of the strategic, executive-level domain of national security. This domain is more expansive with greater and different responsibilities, breadth of perspective, temporal perspectives and interactions than the performance arena of the military "joint warfighter." Moreover, the leaders who lead in the strategic domain include more than military leaders.

There have been some attempts to suggest what the "joint warfighter" *really* means and includes strategic executive-level leaders. However, it should not need to be repeated, but words have meaning and names do have power. Even within the U.S. Department of Defense, how the term "joint" is used varies. Because doctrine is written does not necessarily mean it reflects reality. For many parts of the U.S. defense establishment, "joint" matters concern the managed relationships between Army, Navy and Marine Corps, and Air Forces involved in the preparation for, and conduct of military operations, involving more than one environmental domain (land-maritime-aerospace).[24] The "joint warfighter" is focused on those units and leaders involved in joint military operations.

In this context, the broader concept of "joint" as defining all military components, *and* participants drawn from other government and non-government agencies and organizations that contribute to national security continues to be more rhetorical than real. Moreover, if the "joint warfighter" is the customer for strategic-level national security leadership education, it either connotes that national security is joint

warfare, or the only part of national security of relevance is joint warfare. If there has been no greater lesson from September 11, 2001, Hurricane Katrina, the Iraq and Afghanistan Wars, and counter-terrorism efforts it is that national security is a vastly and necessarily broader concept that "joint warfare."

This has caused an unnecessary dilemma and dissonance. Shoe-horning strategic-level education to fit the operational-level and narrower subset of leadership roles is incongruous. There is a need to reframe education for national security strategic leaders, be it as a separate level of the JPME continuum, or an evolution of that continuum, starting with,

- Tier 1 "Professional Military Education" (PME) is Service and Tactical/Environmental domain-specific; (Service or National Security Department/Agency Lead);
- Tier 2 "Joint Professional Military Education" (JPME) is Joint (Inter-Service, inter-environment) Tactical/Operational Levels of War; (Joint Staff or other Departmental Group Lead, for example, Office of the Director of National Intelligence for the Intelligence Community); and
- Tier 3 "Strategic Professional Education" (SPE) is Interagency, International, Strategic Levels of National Security and Organizational Transformation; (Interagency Coordinating Council Lead).

Another component of this change in mindset involves renewing the campaign to develop a fully cross-government-based National Security Professional Development Scheme, (for example, along the lines of Congressman Ike Skelton's last contribution in 2010—HR. 6249: Interagency National Security Professional Education, Administration, and Development System Act of 2010.)[25]

Finally, there is a need to recognize the second, but equally as, impactful role of strategic leaders and this organizational transformation. Leaders operating in the strategic domain are responsible for sensing, designing and marshaling the necessary resources to transform their current day organizations into those fitted to deliver mission in the future. As the future in an Algorithmic Age becomes possibly more divergent to contemporary times than ever in the past, this task of strategic leadership becomes increasingly important. It goes far beyond maintaining the status quo or making incremental adjustments to capability and is not handled by the "joint warfighter" with the narrower, nearer-term, contemporary mission focus inherent in this

position. This is not to say that the joint warfighter is not a contributor to the strategic level process of transformation. However, again, it recognizes that this process is broader than joint warfare and involves civilian leaders throughout the Department of Defense and other national security-related agencies and departments.

Third, *we need to create a mindset and a culture of the national security educator profession.* This involves reshaping a mindset and culture that has stressed subject-matter expertise and transfer of the status quo educational praxis from one generation to another. This means:

- Establish or reinforce at the institution-level, the priority of developing faculty as professional educators and learners (more than practitioners on a teaching assignment; more than researchers who step into the classroom as guest lecturers).
- Build Faculty Development Programs at the institution-level with contributions from all colleges and components.
- Incorporate design features that attract faculty, reward their participation, and provide them with value-add resources and experiences. (not a "back-to-school" program!).
- Create multiple vehicles of participation for episodic and continuous learning.
- Incorporate experimentation/innovation labs and opportunities for creating, tailoring and testing new or benchmarked educational practices, learning objects, gamification and simulation, new delivery devices.
- Incorporate technologies and facilitators for aiding faculty in developing their personal and professional digital literacies
- Design, populate, and share learning object repositories for use by faculty across the national security education community (DOD schools and Foreign Service Institute, National Intelligence University, etc.)

Fourth, *we need to loosen the master control mindset over the educational experience of our future students to create more personalized, customizable learning spaces, places and experiences that leverage the increasing potential of learning technologies and our students' digital literacies.* This means challenging a number of seemingly unassailable positions. There is a need to assess the validity and value of 10-month resident programs where students are assigned by their Service to meet legal requirements under the Goldwater–Nichols Act as legitimate and other strategic leader-fo-

cused national security education programs whose students must self-select and be supported by a sponsor to attend, as illegitimate and a diversion of resources. Other models, which can provide greater flexibility, different access points for current types of students and students who are currently excluded, need to be investigated earnestly. For example, we need to examine Clayton Christensen's latest work on the idea of evolving blended models of education[26] that incorporate new ways to add value to War College mainstream providers.

In the immediate future, loosening this control mind-set could include:

- Developing and deploying Web 2.0 and Web 3.0-based e-learning experiences for national security strategic leader education
- Emphasizing co-creation (faculty-student), peer-creation (student groups and student exchanges); learning-by-discovery; learning-by-doing
- Designing and deploying technology-enabled learning games and simulations using non-traditional executive-level applications.
- Designing and incorporating other learning objects for use in interactive engagement for students
- Evaluating, re-balancing and designing "menu" option approaches for students that create broad cross-institutional opportunities for core and tailored courses and programs.
- Using Faculty Development Program to upgrade faculty digital literacies to "credit-worthiness" in the eyes of our students.

In Conclusion

It is presented here that there are external drivers and internal unresolved tensions that collectively are pressing for a substantive and sustained transformation in national security education praxis. What our practitioner students need to learn to prepare for strategic leader positions is changing. The content, balance and praxis of our professional development programs need to change in response. Educational praxis itself is being disrupted by broader technology-driven change. Like it, love it, or loathe it, it does not matter: It is happening; live with it; thrive with it. This disruption is shaping the way our future students will think, their expectations, and their needs. It is opening up new opportunities for learning and for how we educate.

Emergent technology-enabled learning options are not second-rate/class, low quality, and cheap alternatives to the "real thing" of F2F resident programs. In fact,

it can be argued that we are reaching the end of squeezing good out of outdated approaches to learning but most educators do not realize it.

Currently most national security education faculty members are subject matter experts and experienced military/government practitioners. Their formative development as educators most usually has involved brief overviews of classroom techniques and on-the-job practice. The gap between current faculty capabilities as educators and where technology is taking education is growing rapidly. As the gap grows, it becomes an increasingly more challenging task for faculty to traverse an increasingly long bridge of self-development.

We need to make a priority of investing in developing faculty skills, talent, and praxis in leveraging educational advances. These capabilities are critical to designing learning experiences suited for professional development needs and likely preferences of our future students.

Notes

[1] See Clayton Christensen, *The Innovator's Dilemma* (Boston, MA: Harpers Business, 2011). Christensen identifies sustaining innovations as those that undertaken on extant ways of delivering performance to improve quality, reduce cost, expand quantity.

[2] Praxis is the process by which a theory, lesson, or skill is enacted, practiced, embodied, or realized.

[3] Army, Navy, Air, Marine Corps, and National War Colleges, and the Eisenhower School for National Security and Resource Strategy.

[4] See Joan Johnson-Freeze, *Educating America's Military* (London: Routledge, 2013).

[5] In this regard I am referring primarily to the curriculum control processes and documents of the Military Education Coordinating Council and the Chairman, Joint Chiefs of Staff Instruction, Officer Professional Military Education Policy (OPMEP).

[6] I am using the term "military and civilian national security leaders" to encompass military officers up to and including General/Flag Officer rank and civilian personnel in government service up to and including Senior Executive Service rank, i.e., those personnel who could expect to participate in a senior leader national security education preparatory experience.

[7] Eric Schmidt, and Jared Cohen, *The New Digital Age: Reshaping the Future of People, Nations, and Business* (New York: Alfred A. Knopf, 2013), 3.

[8] See Moises Naim, *The End of Power* (New York: Basic Books, 2013).

[9] For a short but robustly evidenced discussion of these exponential trends and there underlying catalysts of their exponentiality, see Ray Kurzeil, "The Law of Accelerating Returns" *Kurzweil*, March 7, 2011, available at <www.kurzweilai.net/the-law-of-accelerating-returns>.

[10] Ibid.

[11] Horst W.J. Rittel and Melvin M. Webber "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973), 161-166.

[12] Ibid., 160.

[13] Richard P. Rumelt, *Good Strategy, Bad Strategy: The Difference and Why it Matters* (New York: Ran-

dom House, 2011), 79-84.

[14] See Judith Hicks Steihm's comments on the notable differences in the Myers-Briggs Type Indicator profiles of U.S. Army War College students: "Fifty-eight percent of Army War College students were SJs [Sensing/Judging], as compared with 38 percent of the population as a whole. Twenty-eight percent were NTs [Intuition/Thinking] as compared with 12 percent of the population as a whole…almost 60 percent of the class of 1997 fell into two of the sixteen boxes: ISTJ [Introversion-Sensing-Thinking-Judging] (35 percent] and ESTJ [Extroversion-Sensing-Thinking-Judging] 923 percent). Thus, although some were extroverts and more were introverts, these students shared an "STJ" approach to the world, one that focused on the concrete, the practical; that decisions based on logic and objective analysis,; and that was characterized by a preference for structure and organization. The only two other boxes that got even 5 percent of student responses were the other two TJ boxes: INTJ (7 percent) and ENTJ (12 percent). This seems to demonstrate a strong disposition for the Army to attract and promote people who work carefully, systematically and purposively; and who tend to be uncomfortable with the expression of feelings, with doubt, with the unresolved, and with surprises...However…just that situation [of VUCA—volatility, uncertainty, complexity and ambiguity] is what the war college and its current curriculum claim to be about." Judith Hicks Steihm, *The U.S. Army War College: Military Education in a Democracy* (Philadelphia, PA: Temple University Press, 2002), 55-56.

[15] This is not just in terms of the technology familiarity of Gen Xers and Milennials. The immersive interactions with digital technologies that have dominated the early life experiences and 20s-to-40something Gen Xers it have had an impact on how their brains have evolved, (look at visual acuity, speed of information processing, attention span etc.) as well as upon the greater value they place upon unfettered freedom, collaboration, customization, scrutiny, integrity, entertainment, speed, and constant innovation); see Don Tapscott, *Grown Up Digital* (New York: McGraw Hill, 2009), 73-119.

[16] Larry Rosen, "Understanding the iGeneration—Before the Next Mini-Generation Arrives," *Nieman Reports*, Summer 2010, available at <www.nieman.harvard.edu/reports/article/102405/Understanding-the-iGenerationBefore-the-Next-Mini-Generation-Arrives.aspx>. Rosen notes for example that this second generation of the Millennials consumes, converses and creates media upwards of 15-20s per day; are averaging 6-7 simultaneous tasks at a time; engage digitally through their smart phones (WWW stands for Whatever, Whenever, Wherever, while AOL for this generation stands for Always-On-Life). He sees this generation as the most digitally literate and creative to date; they write, read and view more than any earlier generation).

[17] Philip Zimbardo "The Secret Powers of Time" *RSA Animate*, May 24, 2010, available at <www.thersa.org/events/rsaanimate/animate/rsa-animate-the-secret-powers-of-time>.

[18] The criticisms of e-learning options as second-rate, inferior alternatives to the face-to-face classroom model are extensively made both within the US Defense schools system faculty and student groups as well in the broader educational sector. An observation on these views is summarized here: "elearning as a whole is still considered to be a second-rate method when compared to classrooms. One of the reasons organization are having this discussion is that many instructors insist that elearning is ineffective, so they don't want to adopt it (which makes sense - if you believe it doesn't work well, why try it?)." "E-Learning vs. Class-rooms," *elearnspace*, September 24, 2010, available at <www.elearnspace.org/Articles/Week1_Elearningvs.Classrooms.htm>.

[19] See Christensen, *The Innovator's Dilemma*. In the book, Christensen ruthlessly researches mainstream industry responses to new entrant innovators, showing that mainstream even industry leaders will frequently continue on a path of technologies, practices and models that sustain original competitive

or strategic advantage, ignoring and dismissing new entrants as non-competitive, and therefore an irrelevance. In the comparative "blue ocean" (acknowledging Kim and Marborgne's Blue Oceans Strategies), innovators are able to first satisfy markets that couldn't afford mainstream services and products. New entrant innovators are not weighed down by mainstream performance expectations, institutional overhead, and are able to eventually surpass sustaining technologies in satisfying market demand with lower costs. When this happens, large companies who did not invest in the disruptive technology sooner do not have the strategies, capital (human and financial) to change their chosen direction and adapt.

[20] See Don Tapscott and Anthony D. Williams, *Wikinomics: How Mass Collaboration Changes Everything* (New York: Portfolio, 2006)

[21] See "What Campus Leaders Need to Know about MOOCs" *Educause Executive Briefings*, December 20, 2012, available at <www.educause.edu/library/resources/what-campus-leaders-need-know-about-moocs>; and Michael V. Reilly and Jeff von Munkwitz-Smith, "Helping to Take the Disruptive out of MOOCs" *Educause Review Online*, January 28 2013, available at <www.educause.edu/ero/article/helping-take-disruptive-out-moocs>.

[22] See for example, Joan Johnson-Freeze, *Educating America's Military* (London: Routledge, 2013).

[23] Jim Blaker, "Art Cebrowski: A Retrospective" *Naval War College Review* 59, no. 2 (Spring 2006), 129-145.

[24] The failure to create and use cross-agency strategic planning and management processes (perhaps with the exception of counter-terrorism response), that Defense and State can agree on for example, and the return of Combatant Commanders, post Afghanistan and Iraq to "Annex Victor"—afterthought style thinking about inter-agency contributors are retrograde steps at a time when there is a need for achieving great steps forward in designing integrated and balanced (across the instruments of national power) national security strategies and plans.

[25] HR. 6249, *Interagency National Security Professional Education, Administration, and Development System Act of 2010*, 111th Congress, 2nd Session, available at <www.opencongress.org/bill/111-h6249/show>.

[26] While focused on K-12 education, Christensen outlines the "hybrid" model as following a particular pattern: *It includes both the old and new technology, whereas a pure disruption does not offer the old technology in its full form. It targets existing customers, rather than nonconsumers—that is, those whose alternative to using the new technology is nothing at all. It tries to do the job of the preexisting technology. As a result, the performance hurdle required to delight the existing customers is quite high because the hybrid must do the job at least as well as the incumbent product on its own, as judged by the original definition of performance. In contrast, companies that succeed at disruptive innovations generally take the capabilities of the new technology as a given and look for markets that will accept the new definition of what's good. It tends to be less "foolproof" than a disruptive innovation. It does not significantly reduce the level of wealth and/or expertise needed to purchase and operate it.* Clayton M. Christensen, Michael B. Horn, and Heather Staker, "Is K–12 Blended Learning Disruptive? An Introduction of the Theory of Hybrids," *Clay Christensen Institute for Disruptive Innovation*, May 2013, available at <www.christenseninstitute.org/publications/hybrids/>.

Summary of Conference Discussions and Conclusions

By Linton Wells II

The Third International Transformation (ITX3) Conference and Workshop on *Leader Development for an Unpredictable and Complex World* was held at the National Defense University (NDU) in Washington, D.C. on June 19-20, 2013. The conference was sponsored by Headquarters Supreme Allied Command Transformation (HQ SACT) and supported by the International Transformation (ITX) Chairs Network. Of the seven panels, two dealt with the human dimension of transformation and the changing nature of adult education, two were on U.S. Joint Professional Military Education (JPME), one was on international perspectives, one on enlisted education, and one on related topics. The presentations and discussions were exceptionally rich, with more than 15 hours of recorded video by the end. The underlying theme was "changing mindsets to transform security." Many speakers made it clear that the world is changing around us on many axes, particularly regarding politics, science and technology, and the nature of conflict. The explosion of innovation in adult private education will require leader development to change as well. However, as one presenter noted, many of our organizations and institutions "have been very successful for many years in NOT transforming effectively." The challenge is not only to do better, but also to help make transformation actually occur.

Leading effective change requires special skills and helping people develop from managers to leaders to "change leaders" demands particular attention. The shifting environment demands that people throughout a transforming organization must adjust the way they see the world, which means changing organizational cultures. In turn, central challenges have to be communicated across the whole organization. Cultural change may take several years in large organizations, militaries being a primary example, and internal rates of change may be slower than external ones, but transformative change must still occur to achieve the needed comprehensive effect because of the very high price of failure. Thus, approaches to transformation must involve

people, processes, organizations, and technology, rather than just single, uni-causal factors.

The conference proceedings are structured into the following categories:

- The Human Dimension of Transformation
- The Changing Nature of Adult Education: Drivers for Change
- Perspectives on Joint Education
- International Attitudes
- Enlisted Education and Other Concepts.

Dr. Linton Wells II, Acting Director of Research, and the Director of the Center for Technology and National Security Policy (CTNSP) at NDU opened the conference and welcomed participants, which included both physical attendees and a wide audience via a live video stream. The opening keynote, *National Security Education in an Austere Fiscal Environment* was delivered by the President of NDU, Major General Gregg F. Martin, U.S. Army. He described the rapidly changing security environment and the need for Professional Military Education (PME) to prepare leaders to make critical decisions and solve problems under uncertainty. Since February 2012, NDU has been adjusting to a new mission statement issued by the 18th Chairman of the Joint Chiefs of Staff, General Martin E. Dempsey. This requires that the University align itself with a core mission to support the joint warfighter through rigorous JPME to develop leaders who can operate and creatively think in an unpredictable and complex world. While this process has been taking place, the fiscal austerity being implemented throughout the U.S. Government has presented new challenges to NDU. In response, the University is considering a variety of education solutions that have included distance learning and using new technologies in teaching. Bright spots include some of the pilot programs that are occurring at NDU: First, the JPME II course being offered in Tampa, Florida provides this kind of leader development at the Combatant Command-level for U.S. Central Command and Special Operations Command; and Second, the Master's Degree Program at Fort Bragg includes both senior enlisted and junior officers. In addition to the pilot programs, potential game changers for the current NDU model include: 1) creative solutions to budget cuts using public-private cooperation and academic consortiums; 2) pursuit of blended distance learning courses; 3) leveraging best practices across the globe; 4) integrating military and civilian courses into a complementary "security education" approach;

and 5) examining multinational Command and Staff College leader education as exemplified by the Baltic Defense College.

The Human Dimension of Transformation

The discussion centered on the human dimension of leader development, addressing different levels of granularity from various leaders development models and their effect on organizational transformation. The developmental (or stage) approach to guiding leaders focuses on leader skill levels, and how to help leaders move to higher levels, such as from "achiever" to "strategist." Developing creativity, agility, and comfort with ambiguity is important. Within the leadership framework known as 7-S more attention typically needs to be paid to the "soft S" components of the model (skills, style, staff, shared values) compared with the "hard S" (strategy, structure, systems). Unobtrusive leaders may be more effective than charismatic ones in these environments. Pilots and experiments should be used for new ideas. Students and educators alike should have opportunities to fail early, cheaply, and often.

In addition to the overall leadership development models, the panel addressed research linking human hardiness and adaptable thinking to military leadership. The research identifies a sense of control as a variable that facilitates developmental growth that can lead to more complex and adaptive stances by leaders. Neuroscience and socio-cognitive research offer new insights into how the brain works and how people learn. This can help us improve education, training, and experiential learning. It also can have direct impacts in areas such as mission command and human hardiness.

The Changing Nature of Adult Education—Drivers for Change

Panelists in this section examined adult education from three perspectives: a macro view of higher education, institutional design, and basic research. At a macro level, higher education is being disrupted by globalization, new technology, and constrained budgets. Various technologies such as mobile platforms, Massive Open Online Courses, games and gamification, learner virtual worlds, 3D printing, the Internet of Things, and wearable computing are transforming the capabilities to deliver education. In response, teaching is changing profoundly. Information can be accessed anyplace at any time on any device or platform. This liberation from previous constraints has produced new approaches to teaching and learning. Experiential learning is enjoying a new renaissance within the setting of blended learning. Flipped classrooms deliver the course concepts online while the students apply the concepts in activities in the classroom. Faculty find

themselves teaching as facilitators and mentors rather than being "sages on a stage." Students are required to take more responsibility for their own learning. Big data and robust analytical tools now provide students and higher education organizations with views on their performance across various organizational and intellectual silos. These views have begun to drive profound changes in behavior. As a result of these drivers, higher education is being forced to reinvent itself with new models.

Instructional design uses instructional models to structure educational events. These events can be as large as entire programs and as small as an individual activity. The transmedia learning design model takes its inspiration from transmedia story-telling used by Hollywood. The model puts narrative at the center and reinforces the lessons illustrated in the narrative with games, social media communities, video, and other information resources. This takes advantage of tools learners find in their everyday environment and connects them to specific learning outcomes. Learning can be extended beyond a classroom event into a number of opportunities to explore the intended learning outcomes for the course.

At a more granular level, current brain research is able to pinpoint changes and activity in the brain of cognitive functions such as cognitive adaptability. This ability can be used to improve teaching activities and verify learning. Games can be used as one type of activity to improve cognitive function and learning. But the task becomes, as in all good instruction, to identify which games are the best to use, and for which particular skills or competencies.

Perspectives on Joint Education

Recent developments in DOD's joint education were described in detail. Dr. John W. Yaeger, NDU Vice President for Academic Affairs, led a discussion on the process for the U.S. *Review of Joint Education* (ROJE) that was chaired by General Dempsey. He described how the review was conducted by the Commandants of DOD education institutions through the Military Education Coordination Council. The discussion raised interesting issues about the study's methodology and its impact on future education curricula, delivery methods, and organizational structures.

One of the major outcomes of the ROJE is a revised set of Desired Leader Attributes (DLAs) which will guide future leader development. Focus areas include: lifelong learning, diverse knowledge and delivery options, and prior learning assessments. Dr. Jerry West represented the Joint Staff, which oversaw the ROJE. The next steps in refining the DLAs were described and deconstructed

into learning outcomes, objectives, and assessment framework for integration into curricula.

The role of research in the leader development curriculum was outlined within an NDU case study. At NDU, research faculty have a research mission that can take them into classrooms when invited by course directors or when teaching an elective. The teaching faculty are connected to the colleges and focused primarily on the classroom and teaching the curriculum. NDU's new mission statement has created an opportunity space for these two talented groups to build bridges, understand concerns, and take advantage of what each group can bring to leader development for the students. The dialogue between the communities is being forged both at an organizational level by NDU senior leadership, and at personal levels between researchers and teachers.

Building creativity in military leaders is a cultural challenge in today's complex and changing military ecosystem where leaders must be able to adapt creatively and quickly to new and unique settings. One speaker noted that, "the leaders of the future must be more creative, embrace innovation, and relish unpredictability of the threats faced." This requires JPME to include courses that deal with the future and emerging threats that are occurring at even greater speeds. External forces that are driving the need for change in JPME include technology, a rapidly evolving strategic landscape, and new grammars of war. Yet, changes are never easy, particularly since the disruptive alternatives implied by "transformation" and JPME include forces that inhibit change, such as tradition, doctrine, bureaucracy, and faculty skill sets. To build creative military leaders, the PME system is being challenged to adjust curricula, delivery methods, and organizations to meet the real needs of the students who are the future national security leaders. To achieve these learning outcomes all levels of the PME process must work together from policymaking at the Officer Professional Military Education Policy (OPMEP) level, to faculty development, to the creation of knowledge through research, to the engagement of learners as stakeholders.

Social science and cognitive neuroscience can inform these future strategic leaders. Neuro-leadership focuses on how leaders "take into account their social environment to make and solve problems, regulate emotions, collaborate with and influence others, and facilitate change." Key areas of brain research include focus, stress and insight. Optimal brain performance requires minimal stress, good sleep and a positive control outlook (sense that one can affect outcomes). Bringing these insights into curricula can not only influence leaders at the per-

sonal level of development, but also show how the brain and cognitive processes impact a decision situation.

Effective governance involves coordinated activities and budgets, overlapping missions, and personnel expertise. The matrix of national security-related agencies requires interagency approaches to achieve objectives. Essential to this cooperation are, 1) whole-of-government approaches to interagency education; 2) interagency training and real-world experience with partner departments; and 3) acculturation of all partners through immersion in these interagency partner environments. This approach requires the identification of preferred methods of attaining required interagency education, effective means for gaining joint support and interagency training objectives within practical costs, and preferred methods for validating the attainment of appropriate levels of proficiency in joint interagency operations. How should governments incentivize badly needed interagency cooperation? One panelist recommended that Congress carve out separate fenced funds for use only in interagency education and training within specific executive branch agencies, most of which are under-resourced in this area.

Joint education is approaching change from a variety of perspectives. One technological disruption, distance learning (DL), is being embraced by the U.S. Air Force Air Command and Staff College online Master's Program (an element of PME). The program first needed to staff shatter the fallacious mindset that DL in a PME setting can be a cheap substitute for resident PME. Maturing DL capabilities can now provide a platform for quality graduate-level courses. The program offers a menu of DL courses for officers to choose from to meet their education, training, and experience needs. The goal is to provide better-educated, better performing officers across the force. Another potential benefit of DL is that it may enable students to maintain a better balance between work-education and family activities. Work-family balance is increasingly recognized as critical for maintaining well-being and resiliency. DL offers a precision tool for use in career-long education but need leadership commitment and support to succeed.

In the increasingly complex environment in which military officers are being asked to operate, transformation is essential to equip officers with intellectual agility. As noted in many places, the hardest part is to change the culture and this cannot be avoided in any transformation. The prerequisites for the transformation of JPME lies in a distinction between education and training that preserves academic freedom, quality faculty, relevant curricula, and institutional credibility. Faculty quality is determined not only by expertise in the instructor's fields of study, but also in the mix between military with operational experience and traditional civilian faculty who are

active researchers. Degrees need to have credibility based on academic rigor. Institutions need to take the responsibility to fail those students who do not meet learning objectives.

The discussions raised questions for further research: How, and to what extent, can PME/JPME institutions adapt to private educational innovation? How can already packed curricula be adjusted to incorporate new content and approaches? Who can say what should be deleted? How much attention should be paid to broadening future leaders, vice deepening them in specific subjects?

International Attitudes

The international attitudes panel offered diverse views on military leader development from allied and coalition partner perspectives. International voices were represented by panelists from the United Kingdom, the Netherlands, and Singapore, and two other important addresses on international topics were also delivered outside of the panel.

Using the 2012 Defence and Security Review in the United Kingdom as a lens, the presenter felt that a strategic framework was missing and had been replaced by budget pressures and timelines. To avoid such mistakes, future reviews will need to examine four conditions for transformational change: leadership, effective people, implementation, and resources. All are related and must be consciously addressed together. However, the presenter noted that senior leaders are often uncomfortable in taking all the steps needed to lead transformational change, and that realistic timelines with appropriate investments of time and money are necessary, including the development of change leaders. Clear and cross-party communication is key to overcoming stovepiped thinking and beginning the fundamental changes that will be needed in future mindsets and organizational cultures.

Based on changes in the operating environment, Singapore has redesigned their leader development approach around transformational leadership concepts throughout the professional development life cycle. They have taken some of their practices from successful business and education innovations. Integral components for both leader development and creating a learning organization include learning networks, self-directed learning, and knowledge management. Future leaders will need to "self-discover," generating their own insights assisted by mobile devices that facilitate learning at the point of need. "Learning to learn" must inform all professional and leader development. Career-long learning becomes a necessary mindset in a learning organization.

For the Dutch, mission command means that key decisions must be made by the leader on the spot, informed by a clear understanding of the mission and the commander's intent. This requires the leader on the ground have an adequate level of education, analytical capacity, knowledge, and capability of the leader on the ground, as well trust from that leaders commander. The presentation included a reflective look at leadership in the context of Bosnia and Afghanistan, reinforcing that practical leadership experiences and lessons learned can inform more theoretical approaches. Leaders perform many functions including mentoring, innovating, facilitating, coordinating, monitoring, and directing, but they principally influence followers to achieve desired outcomes. The doctrinal principles and processes of the organization provide the foundation for effective leadership.

Brigadier General Giovanni Fungo, Italian Army, Assistant Chief of Staff Capability Engineering and Innovation at HQ SACT, delivered a keynote address to discuss the innovative programs being created across ACT. These included the Joint Force Trainer initiatives that provide an electronic catalog of all training across the Alliance and its partners, the roles of the Joint Warfare Centre, the Joint Force Training Centre, and the Joint Analysis Lessons Learned Center. All of these initiatives have the potential to make coalition exercise and training capacity much more effective. In addition to these efforts, ACT is leading the way to enhance NATO's collective long-term perspective and continuous transformation through the Strategic Foresight Analysis and the Future Framework of Alliance Operations (FFAO) projects. The FFAO will deliver four outputs: 1) a Future Organizing Concept informed by; 2) a set of Broad Strategic Insights and 3) associated capability implications; through 4) an assessment of mission types to inform the future Capability Hierarchy Framework.

Professor Julian Lindley-French outlined an international perspective on military education derived from a very effective workshop, *Connected Forces, Educated Minds: Transformation and Professional Military Education*, held at Wilton Park in the United Kingdom in May 2013, followed by the 42nd Conference of NATO Commandants convened at Oslo three weeks later on *The Role of Education in the Post-Afghanistan Era*. The key is that the link among comprehensive defense education, NATO, Smart Defence, and the Connected Forces Initiative must be firmly established. The complex, uncertain, and ever changing global environment with shrinking defense budgets makes it essential for transformed armed forces to be linked to transformed defense education. Sustaining this unity between armed forces and educators will require an ongoing demonstration of utility, affordability and relevance. Actions must

be taken in the context of a long view that projects the future of the education and training some twenty years in the future. This reflects what will be needed by officers and non-commissioned officers during their careers. Professor Lindley-French presented several recommendations for NATO to adopt. First, it is up to NATO leadership to highlight the best training and education practices for the Alliance, helping to set standards for education and training as well as promoting the use of new technologies in education and training. Second, it is important for the Alliance to exploit the military-education partnership fully with each appreciating the value they add to the overall national goals. And finally, NATO defense education is central to its strategic mission. People and their knowledge will remain a critical enabler of success in an era of complexity.

Enlisted Education and Other Concepts

The enlisted panel addressed issues pertaining to enlisted education and the progress that is being made there. Enlisted education is considered as important to the success of NATO as officer education. The U.S. Senior Enlisted Joint Professional Military Education (SEJPME) offered at NDU's Joint Forces Staff College is a standalone web-enabled course for Senior Enlisted Leaders serving in or slated to serve in a joint organization, and graduates receive a course completion certificate. NATO enlisted development programs have been created to bridge gaps in enlisted leader development. The Command Senior Enlisted Leader course develops senior NCOs to serve in NATO or Alliance national forces as advisors to senior commanders. There is a concerted effort by the Partnership for Peace Consortium, supported by senior enlisted leaders, to produce a Professional Education Reference Curriculum for NCOs that is due for publication later in 2013.

The participants in the final panel addressed other approaches for military education. The topics included an international response framework, knowledge as a basis for professionalism in defense acquisition and a transformation praxis to develop educators for senior leader national security education. It is not only important to approach transformation from the Alliance, national, and institutional levels, but it also is crucial to transform at the program and educator levels.

One presenter discussed defense acquisition as another case study in transformation. The changes in the 21st century security environment inevitably require changes in the way that defense acquisition is done. To tackle this, they suggest a need for a new defense acquisition professional who understands the context, contingencies, and com-

plexities of the current environment. This professional should be part of a cross-functional team with a wide perspective, a career path that encompasses acquisition as a whole, and the ability to inspire and influence decisionmaking at all levels.

The current educational model in PME organizations has applied a sustaining approach to change and innovation that preserves and protects the model from external threats. For most institutions this model can be described as being teacher-centric with structured curricula, small seminar sizes, focused on faculty-led "Socratic" discussions, preparatory readings, VIP guest lectures, plus experimental learning exercises and group projects. In order to meet the many challenges affecting national security leader education, the author suggests: 1) rebalancing at the enterprise and component levels to identify "transitional" and "transformational" mindsets and apply them where appropriate; 2) reassessing mindsets to adjust military-centered and operational level focus to more policymaking level national security education; 3) creating a culture of the national security educator profession; and 4) loosening the sense of needing a "master control" over the educational experience of our future students to move to a more "learner-centric" environment.

Conclusions

Many innovative ideas were tabled on educational technology, content development, and teaching methodology. However, the recurring message was that *people* are the most important component of change. The focus needs to stay on "changing mindsets" by diverse means.

Evolving pedagogies, such as Advanced Distance Learning and NDU's Advanced Education Research Initiative have great potential. Narratives presented in virtual worlds, such as the "Survivor's Guilt" video that was shown, can be valuable as U.S. and NATO forces transition away from combat operations. They can help bring experiential learning from operational units into other learning environments and transmit institutional learning back to the field. This can bridge gaps between training and education—keeping the focus on "learning," by whatever means. Such approaches can help preserve lessons from the Decade of War even as combat experience wanes. Flexible delivery also facilitates career-long individual learning.

International viewpoints added essential perspectives to the mix. How can conference insights be tied to NATO education, training, Command Senior Enlisted Leader programs, among many others? Dutch metrics from different contingencies might be applicable to other lessons from the Decade of War. How can the U.S. and

NATO learn from Singapore's educational experiences? Within NATO the link between Smart Defence, the Connected Forces Initiative, and JPME/PME needs to be firmly established if nations are to maintain "intellectual interoperability."

The term "transformation" was used frequently, but often imprecisely. Since our environment is changing, many forms of transition will be needed, but the distinction between "transition" and "transformation" is important. Transformation should focus on the discontinuous change needed to deal with unsustainable situations ("adapt or die") or to shape the competitive environment. Even risk-averse organizations must transform. At the same time, the term should be saved for the most serious challenges. Having more than ten simultaneous "transformational initiatives" in one organization is almost certainly not executable. Future projects will demand collaboration with public-private, whole-of-government, and transnational participants.

As a result of the conference, HQ SACT will continue to focus on concrete means to address the transformation of education and training across NATO. These include: 1) continue collaboration with NDU and the ITX Chairs on a transforming mindsets program across both organizations; 2) conduct an independent assessment of partner nations education aimed at future leaders; 3) develop a NATO Transformation Handbook and an E-Learning module; 4) initiate a trans-media experiment through ACT's Innovation HUB with industry and academia; 5) raise awareness/synergies among PME education and researchers on futures and transformation issues in collaboration; 6) solicit the Chiefs of Transformation (COT) to share perspectives on leadership development; and 7) use the 2013 Chiefs of Transformation Conference (COTC) to identify key takeaways, experiments, and tools to further the transition and transformation of leader development.

The way ahead is exciting. During the first half of 2013 an arc developed focused on innovation, and perhaps transformation, in defense education. It begin with the Wilton Park conference on *Connected Forces, Educated Minds: Transformation and Professional Military Education*, and NATO's 42nd Conference of Commandants in Oslo on *The Role of Education in the Post-Afghanistan Era*, in May 2013, extended to the U.S. Joint Faculty Education Conference on June 17, 2013 and the ITX3 Conference and Workshop, and continued to ACT's Chiefs of Transformation Conference in December 2013. Going forward, applicable NATO concepts can be extended to nations.

The ITX Chairs Network will continue to support these efforts. The continuity that the Network brings may be useful given the importance of persistent engagement in implementing change. Going forward, the chairs propose to focus on:

"Leader transformation in a time of rapid change under fiscal austerity in the context of strategic rebalancing, while sustaining and evolving the trans-Atlantic link." The intent is to build on the results of this conference, tying them into work plans that leverage budget realities to encourage innovative approaches.

Afterword

Major General Gregg F. Martin, U.S. Army, and

Commander Elton C. Parker III, U.S. Navy

This book captures part of an ongoing arc of innovation in Joint Professional Military Education (JPME) and PME in general that will continue into the future. In 2012, Chairman of the Joint Chiefs of Staff General Martin E. Dempsey issued a white paper challenging those in PME communities to develop "agile, adaptive leaders with the requisite values, strategic vision and critical thinking skills necessary to keep pace with the changing strategic environment." With the kind of creative thinking evidenced in the conference that produced this edited volume, we can achieve this end.

Many new realities are forcing change. The explosion and diffusion of technologies means that the United States and its partners, allies, and friends no longer enjoy distinct operational and technological advantages in many areas. Nonstate actors and individuals now have instant access to previously unheard of quantities of information. The spectrum of warfare we are used to, and have trained for, is also changing. At the same time, we must deal with the reality of fiscal austerity. As the New Zealand physicist Lord Ernest Rutherford once stated, "We've got no money; now we must think." This means that education and adaptability are more important than ever, and a highly educated and agile force is needed to buttress American and global security into the future.

The base on which National Defense University is located was built over 200 years ago to protect a fledgling capital and nation from invasion. Its defenses were traditional—training for soldiers, stockpiles of weapons, and fortifications to hold the enemy at bay. It was responsible for the *physical* defense of our country. Today, Fort Lesley J. McNair is still responsible for contributing to the defense and security of the United States. But the battlefields, as well as the soldiers, have changed. The younger members of our profession have been raised in an interconnected, technology-driven world where instant communication is not only possible, but also expected. This gen-

eration absorbs and diffuses information rapidly and in different ways than preceding ones. Thus, as the conference and this collection of chapters bear out, we now must focus on the *mental* aspect of defense and security; the main battery of weapons in our arsenal is now *ideas.*

The newest generation to join our collective profession of arms possesses higher levels of operational experience and is matched by a strong desire to participate actively in its own education. Collaborative, context-based problem-solving events are more appealing and effective in achieving educational outcomes than traditional lecturing. Teaching creativity, however, is no easy task; it requires that we reexamine ourselves as educators and change the way we structure the classroom. To develop agile, adaptive leaders, we must adapt ourselves first.

Maintaining preestablished "cylinders of excellence"—stovepipes or hierarchies—stifles thinking. We should instead be sharing ideas and joining with other institutions to ensure we are able to adjust to the ever-changing and dynamic security environment. We must view the contemporary era as an opportunity to innovate and create. We must use this as an opportunity to reexamine the way we teach. Joint education must become a standard in our institutions to ensure that joint action is realized. To accomplish this goal, we have focused on the human dimension of leader development, the drivers of change within education, the need to reexamine the practice of joint education, understanding and learning from the transformational experiences of our allies across the globe, and a variety of other perspectives, all of which are vital to teaching future leaders.

The Transformation Chairs Network was created by the Secretary of Defense in 2004 to support the Office of Force Transformation in its mission to challenge the status quo with new concepts for U.S. defense. Its underlying precept was the need to move transformational thinking down into the heart of the military organizations, principally through the educational system, to kick-start a bottom-up push for change. This change must address people, processes, and organizations, as well as technology. The Transformation Chairs initiative has since gone global, and today the network is joined by representatives from many of our North Atlantic Treaty Organization allies and other partners such as Australia and Singapore.

There is amazing potential among the members of the international military education commands to tap into and continue such cooperative approaches as we work together toward our common purpose: developing "agile, adaptive leaders with the requisite values, strategic vision and critical thinking skills necessary to keep pace

with the changing strategic environment." Leveraging each other's strengths is the best way to achieve synergistic effects through the sharing of ideas—military and civilian, foreign and domestic, public and private sectors—to find new ways to solve more complex problems with fewer resources. We must forge new partnerships and strengthen existing ones, and come together to overcome shared and transnational threats and challenges to our collective national security. This will require new levels of imagination, creativity, relationships, and teamwork.

The current situation of fiscal austerity presents an opportunity to harness the power of joint education to develop leaders who can meet the challenges of an unpredictable, complex, and perilous world. This is no easy task, but we must, and we will, succeed.

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This book is a compilation of papers and discussions from the Third International Transformation Conference and Workshop on Leader Development in Washington, DC, on June 19-20, 2013. The event was sponsored by the NATO Headquarters Supreme Allied Commander Transformation, hosted at the National Defense University, and supported by the International Transformation Chairs Network.

With a decade of conflict in Iraq and Afghanistan nearing the end, one of the many lessons learned from these wars has been the importance of leader development, and how leaders must be adaptable enough to meet the contemporary and emerging security challenges. Thus, the Professional Military Education enterprise across the U.S. and its allies must be directed towards preparing leaders for an unpredictable and complex world. These chapters are grouped according to the most important categories for achieving this end: 1) The Human Dimension of Transformation; 2) The Changing Nature of Adult Education—Drivers of Change; 3) Perspectives on Joint Education; 4) International Attitudes; and 5) Enlisted Education and Other Concepts.

The conference delivered valuable insights, visions, and recommendations on how to reorganize education across the national security spectrum to create better warfighters, uniformed and civilian, because it is these leaders, now and into the future, that will help to define the world in which we live.