# TECHNOLOGY AND LEADERSHIP: INTERNATIONAL PERSPECTIVES

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# FOREWORD

The military operates in volatile, uncertain, complex and ambiguous environments. While technology can be a solution to the problems faced by militaries, it can also be its own problem in need of a solution. Whether bane or boon, technology is not only changing who, what, where, when, and how we fight, but the rate of technological change is also ever-increasing. Scientists and practitioners in the business of leadership education, training and development are on the front lines of the battle as they are attempting to leverage technology to create an effective fighting force, while simultaneously protecting the force from the negative effects of the same technology.

I am pleased to introduce *Technology and Leadership: International Perspectives*, the twelfth volume of the International Military Leadership Association Working Group (IMLAW) series published by the Canadian Defence Academy Press. In this volume, 33 authors from 8 countries offer their perspectives on the relationship between technology and leadership. The volume opens with a section dealing with the relationship between technology and leadership development where authors from the United States describe how technologies such as collaborative tools, learning analytics, historiometric assessment, and latent growth and multi-level models can make leader development processes more efficient and effective. In the second section, authors from New Zealand, the United States, and Portugal discuss how technology is being used to develop more effective teams through pre-deployment training programs, human-machine teaming, social simulators, and transitioning from hierarchical to "edge" mode configurations. In the third section, authors from Singapore and the United States address the relationship between technology and the broader organization by describing how team effectiveness can be created at the operational-strategic level, how disruptive innovation can be used to create change, and how leaders can create empowering cultures that facilitate innovation. In the fourth and final section, Swiss, Canadian, Swedish, and Australian authors discuss how information and communication technologies and socio-cultural analyses can help leaders make decisions, and the positive and negative implications of the widespread and growing use of social media in armed forces.

Established in 2005, the IMLAW provides a forum for military leadership researchers, academics and members of military leadership institutes to collaborate on a wide variety of military leadership projects. Specifically,

it furthers the understanding of the many facets of military leadership and provides practical guidance in dealing with leadership issues for the benefit of its members. This volume is one of the tangible outcomes of this long-standing collaboration. I commend the efforts of the authors, editors and publishing staff in producing this work and enthusiastically endorse our continuing relationship.

L. Cassivi
Rear-Admiral
Commander
Canadian Defence Academy

# CHAPTER 1

## HOW HARD DATA INFORM SOFT SKILLS: THE IMPACT OF TECHNOLOGY AND LEADERSHIP DEVELOPMENT IN A DIGITAL WORLD

***Lieutenant-Colonel James Dobbs, PhD; Richard Bakken, PhD; and Maureen A. Guarcello, PhD****

"The future cannot be predicted, but futures can be invented."[1]

Nobel Prize recipient and inventor of the holographic method, Dennis Gabor, offers a perspective both dystopian and optimistic about the role of technology and humanists in the future. He points out a "trilemma" of societal threats motivated by technology, inclusive of: warfare, overindulgence in leisure, and overpopulation.[2] His points are well taken. Just as technology presents solutions to one set of challenging problems, it brings with it a host of new potential challenges. Some of these consequences are foreseeable, while many are unexpected. As leaders and stewards of both technology and human connectivity, we have a responsibility and an opportunity to shape the different ways technology exists in our world.

This chapter provides deeper context surrounding potential intersections of technology and leadership development in the military through an amalgamation of insights from leadership theory and higher education technology exploration and research. With a focus on the development of soft leadership skills, these competencies are viewed through three varied, but interconnected, lenses. The first of the three lenses provides an overview of technological applications and future potential, combined with interpersonal interventions in service of future leader development in the U.S. military. The second lens illustrates how technology, leadership and leader development exist in theory and practice in different education settings, and how these may transfer to military training resources. The third lens introduces learning and predictive analytics and the potential these methods present for data-informed decision-making in both higher education and in the development

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the United States Air Force Academy or the United States Department of Defense.

of future military leaders. The chapter concludes with an overview of the technological advances that have been made in the military in this regard, and how these changes raise new questions about the costs and benefits of taking a significant step onto the technological landscape.

## THE IMPACT OF TECHNOLOGY ON DEVELOPING MILITARY LEADERS

Leadership is central to the identity of the U.S. military. The ability of the U.S. military to develop conscientious leaders and produce action-oriented people produces a competitive advantage for our nation. However, for more than 30 years, the manner in which the U.S. military conducts leadership development and personnel management has gone largely unchanged while the technological environments have changed at an unprecedented pace. Although the U.S. military's industrial-age personnel management system and leadership development process is adequate today, it may not support the needs of the future, putting our nation at a distinct disadvantage.

Senior civilian leaders within the Department of the Defense recognize this technological gap and are calling for a human capital management transformation that will enable our effort to meet future strategic challenges more effectively.[3] American history is filled with examples of military services ignoring indicators that change was needed, resisting reforms due to parochialism or cultural inertia, and forfeiting the initiative to change voluntarily. At times this has forced civilian political leaders to dictate change. The 1986 Goldwater-Nichols Act is a prime example where the law included changes to the structure of the Joint Chiefs of Staff to enhance the power of civilian decision-makers while also requiring the military branches to work together and more effectively. The U.S. military can choose to shape and lead the coming transformation in human capital management or it can continue to wait, react, and follow.

While numerous researchers have focused their attention on determining the role of technology and learning in higher education and business organizations, comparatively scant attention has been directed to the impact of these variables in the public sector.[4] Organizational effectiveness research is often related to profit-loss financial performance with limited relevance to public institutions. In comparison to the corporate sector, the U.S. military has received less empirical attention from researchers. Although the literature rarely addresses these issues within the armed forces, military and civilian leaders continue to look for ways to cut costs and improve efficiencies.

It is particularly pertinent to the military to understand the application and benefits of technology and analytics within leadership education and development and the call to develop and assess these potential innovations within the U.S. military has gone largely unanswered.

In light of advances in predictive modeling technologies that have made it possible to track and analyze large amounts of data, many analysts now believe that data analysis has become a critical element in making well-informed policy decisions, managing programs and administering personnel placement. When decision-makers have access to sufficient data from which to draw reasonable conclusions, they are in a better position to make informed policy decisions, measure or assess the effectiveness of programs, and provide transparency into operations. In some circumstances, a lack of data can lead analysts and decision-makers to draw inaccurate or misleading conclusions. The result may be policies that squander resources, waste taxpayer dollars, undermine program effectiveness or, in the case of the military, misdirect government operations.

Despite the importance of data, general consensus exists among most leadership practitioners that the Department of Defense does not sufficiently incorporate data into decision-making.[5] Major policy and personnel decisions–from economic development programs in Afghanistan and Iraq to choosing the next commandant of the United States Air Force Academy–are made without the support of substantive data. These decisions are sometimes based on assumptions or subjective opinions, and some argue that there is a disconnect between relevant measures of success and the variables used to evaluate program reviews and manning models. As retired Air Force General Norman Schwartz noted in a discussion on what he learned about the private sector after leaving the military, "people make decisions in the private sector largely based on data–some of it is instinct, but data-driven decisions are a big thing and I have learned that, and certainly that applies in a government setting."[6] Additionally, in a 2015 hearing on management of the Department of Defense, Senate Armed Services Committee Chairman John McCain stated, "It's hard to address management problems when you lack basic data that are essential to understanding and diagnosing those problems. And yet, that is the case with the Department of Defense."[7]

In 1967, Bernard Bass, one of the foremost leadership scholars at the time, was asked by the American Management Association to speculate what management/leadership would look like in the year 2000. Remarkably, most of his predictions would come true. For example, Bass foresaw that managers would make daily use of computers in analysis and decision-making. He also

predicted that leaders would have to adapt to workers with greater knowledge and skill and desire more challenging work. Further, he predicted tremendous growth in leadership training and development. All of his predictions have come to pass, and in 2001, Dr. Bass made another host of predictions for the year 2034. Some of his future considerations include: (1) leader development efforts will continue, with ongoing training being a requirement for leaders; (2) leaders will make regular use of artificial intelligence to aid in decision-making; and (3) virtual work (e.g., virtual teams, web-based collaboration) will be the rule rather than the exception.[8]

While the literature about leadership and leadership styles has not changed much since 1967, the situation and circumstances surrounding leadership development has drastically changed in recent years. In this new era (as Dr. Bass predicted), rapid advances in technology have transformed the workplace and changed the way we learn by impacting interpersonal communication and collaboration. Many U.S. federal agencies have started implementing different technologies into their learning programs (e.g., web-conferencing, podcasts, blogs) using these tools to cut training costs, reduce carbon footprint, and increase continuous learning outside the classroom.

Similarly, technology is playing an important role in leadership and the development of soft skills in the military. As more military training and education programs migrate to virtual classrooms, webinars and self-paced e-learning courses, many practitioners believe these new tools could change the way we assess and develop leaders in the future. For example, public speaking is one skill where technology can play a large role and be effective. Watching videos of skilled speakers may help the learner get a baseline for the ebb, flow and structure of a presentation or speech. Another technology-based learning method on the rise is the use of virtual simulation to train and assess leaders. For instance, consider a fully immersive, face-to-face coaching session with a problem employee in a virtual reality training session. A leader's response in the simulated meeting could be scored and subsequently ranked compared to his or her peers. This instructional training tool could be extraordinarily valuable for the delivery of ongoing training content and practice to leaders in remote places, varied time zones, and those who may not have military personnel available to provide constructive feedback in a face-to-face setting.

As scholars and practitioners, we have an opportunity to advance leadership development by helping the military better understand how new assessments, e-learning, and web-based training tools can be used most effectively, but we can't do it alone. The skills needed for product development and

training span multiple disciplines–from neuroscience and computer programming to game design and data science. We also need experts who can create the best possible user experience–one that generates reliable feedback that leaders can use to achieve their developmental goals. Because psychologists have experience studying and assessing people based on an accepted code of ethics and research standards, they too have an important role to play in deciding how best to use these new developmental tools. Cultural and technological shifts can move at a glacial pace in any industry, notably education. The following perspective helps inform how the use of technology can influence student and leader development, and more importantly, how these changes are implemented by employing leadership theory in an effort to create sustainable change.

## LEADERSHIP, TECHNOLOGY AND STUDENT DEVELOPMENT IN CONTEXT

The importance of leadership development in the military has already been established, but a question remains: how is leadership theory being used to develop soft skills, or fine-grained social engagement for future military leaders? Further, how are these same leadership skills being employed to create opportunities for technological advancements in the development and education of those personnel? These are not easy questions to answer, and they rely heavily upon the meaning and interpretation of the term "leadership." This section reviews a number of concepts and research streams in leadership development, and ways current technology use in education are contributing to increased capacities in that area.

Leadership and the very notion of leadership development is an emerging field with many areas of iterative research. The discovery of one definition of leadership has remained elusive across the breadth of research within the discipline. Dugan writes that leadership theory continues to be influenced by a variety of factors, including organizational culture, formal theory and group engagement.[9] Overall, leadership development has been researched extensively with a variety of outcomes tied to core assumptions. One definition of leadership development postulates that it remains a continuum that must take a variety of factors into account to realize necessary outcomes.[10] By working to develop this type of shared language centered on primary core assumptions, the hope is to identify key components within the learning process and offer a coalesced definition of how these factors influence leadership development.[11] This effort is also relevant to military leadership development.

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Researchers suggest that success can be measured incrementally through engagement over time.[12] One notable example from this work offers that leadership gains displayed by students during college represent a mere glimpse into a larger store of information actually amassed through time prior to those students entering college.[13] The suggestion from this work is that a proper evaluation of success requires a significant effort over time to build on existing knowledge and experience across a diverse sampling of subjects. Dugan and Komives posit that educational programs may fail to offer enough information diversity to facilitate new learning outcomes.[14] Despite the inherent challenges within these environments, individual experiences within a college environment can be an important consideration for leadership development.[15] The ability to sufficiently make meaning within the context of these programs can vary greatly and may be impacted by interactions, relationships, and other forms of experiential learning.[16] Since several, often extraordinarily nuanced, influential factors exist within these learning environments, considerations of how technology may be purposefully employed presents a valuable avenue to inform and promote students' education, holistic development, and increased understanding of potential impact within similar military contexts.

With such varied experiences for professionals and students within these environments, identifying other factors that may impact leadership development can provide helpful context. Researchers have looked at how leadership can be developed over time and whether a cognitive framework can impact various types of leadership development.[17] Some authors also discuss how advances in technology and alterations within contextual environments are part of "continuous learning" as an element of leadership development.[18] Although this process may take time, and may not show visible factors at first, Dugan goes further to suggest that social engagement could be the linchpin for the success of this type of leadership development.[19] Culture, social status, access, and roles all potentially influence the ability for individuals, and students, to be successful through this method of leader development, but it presents a new way to examine leadership development at a micro level. The development and analysis of soft skills at this range is transferable to other disciplines, including the U.S. military. However, the acute nature of this work requires a new set of tools to teach, train, measure, document and optimize the social interactions upon which the development is based.

The use of technology presents an additional factor to consider within both the military and leadership development spaces. Early research by Hopson, Simms, and Knezek investigated how faculty use of technology within certain enhanced learning spaces (e.g., laboratories, classrooms) may improve students' higher-order thinking skills. In particular, problem-solving and critical thinking are two areas that can be improved with the use of technology.[20] Adaptive quizzing is one example of this concept. The quiz may begin with a moderately difficult question, and depending upon the response, the algorithm will generate another question with a higher or lower degree of difficulty. Learners receive a personalized experience while interacting with content that meets them where they are, oftentimes working independently. The individual may begin with lower order concepts such as identifying definitions of terms, and gradually work up to increased levels of comprehension as they move through scenario-based questions.

While there are many advantages to using technology in education contexts, it also brings a level of change that touches not only the delivery and exchange of information, but cultural and social aspects in a learner's life. Administrators have a special view of the learning experience within a variety of experiential contexts. In one case study focused on leadership and student development in the Middle East, administrators were asked to describe how they support native students who were challenged to interact within a Western university branch campus setting for the first time. Administrators from universities who participated in the study described a number of influential factors that affected students' ability to learn and collaborate. They acknowledged a strong student desire for collaboration across the local campuses and between "home" campuses based in the United States. Several researchers noted that answering the call for collaboration and peer interaction could be influential to the promotion and development of student leaders within this context.[21] One administrator described this process in the following way: "We need to do more things together with people from other universities and very strongly, very strongly [this is] said by the students. They write it out, they say it; they say we need to do more things together. I hear strong voices from students saying we need to do more things like this, we need to direct more because it is important to get to know people."[22] Based on this feedback, what are some possible approaches to facilitate new learning opportunities and leadership development by way of technology application?

## USING TECHNOLOGY FOR COLLABORATIVE EDUCATION

Access to videoconferencing technologies is one avenue to promote leadership development for students in diverse settings to collaborate with their peers at the home institutions and other campuses around the world. Students in the previous setting described some of the benefits as yielding greater opportunities to practice interpersonal communication through group activities where they may be having this experience collectively for the first time.[23] Some even take advantage of these technological tools to learn more about the home campus and choose to be a part of an inter-campus exchange where they spend some study time in the United States. Web-conferencing and other video distribution systems are now built-in to portable devices and have collectively shrunk the world we access down to the speed and ability we have to access an Internet connection. Virtual meeting technologies including FaceTime, Zoom and Skype allow for group meetings, document and desktop sharing, and face-to-face interactions to occur anywhere at any time on nearly any device. The use of this technology not only brings users together, but also promotes new ways to synthesize the effects of interactivity, experiential content, and appropriate response norms regardless of location or cultural context.

When used purposefully, equipping classrooms with the necessary technological tools also promotes and supports an environment for learning and increased leadership development potential. A technology-rich space can be dynamic and learner-centric where users can hone new skills and demonstrate proficiency across disciplines. Within the leadership arena, activities in these settings can provide the space for increased practice on public speaking, directed group discussions, and facilitation of peer-to-peer feedback. Journaling and peer coaching are also possible when users can share information for follow-up and record data on demand. Based on one author's consideration of systems in place at a leading U.S. research university, increased access to traditional and flexible learning spaces also provides faculty the opportunity to engage with students in a variety of ways. Instruction may be facilitated in traditional lecture format or through non-traditional means using moveable furniture and online tools. The ubiquitous nature of the technology access through installed and portable technology systems allows for maximum flexibility of use and participation in each learning space. Facilitators are able to transition from traditional lecture formats to focused small group activities using multiple locations within the same space. The technology then affords the opportunity for

each small section to coalesce and report back final outcomes that can be shared to every other group for additional synthesis and reflection. These types of social interactions and group-related activities, fostered by use of available technological resources, provide a conduit for increased student leader development within learning environments.[24]

Each of the concepts researched on technology in education can also be relevant models for use by the military to promote effective leadership soft skill development. In the same way students gain exposure to new methodologies in teaching and learning, the increased use of technology and practical application of available tools may also contribute to military leader development currently underway at military service academies. Continuous learning and social engagement are two notable areas where technology has proven to facilitate new and purposeful arenas for discovery and discourse in education. The use of technology may also help to promote leadership development in the military by increasing exposure to tasks that exercise higher order thinking skills, including applications and real-time examples that promote problem-solving and critical analysis. This effort to engage in new experiences through a variety of applied learning environments is just one way to foster openness and diversity of thought and to promote productive, global, cost-effective, and remote U.S. military leadership development. These activities do not take place in a vacuum, nor are they untethered from a central reporting structure. By tracking the utility and performance increases gained through the use of technologies that provide leader and student development, we can optimize learner experiences.

## FORECASTING SUCCESS THROUGH LEARNING ANALYTICS

Though seemingly implicit, leadership and development in higher education is predicated entirely upon university admission, which in the United States has become increasingly competitive. In the Fall of 2016, the University of California, Los Angeles (UCLA) received a record-breaking 102,177 applications for the incoming freshman class.[25] This event marks the first time undergraduate college applications at one institution reached the six-figure mark. Many universities accept fewer than 20 percent of those prospective students, including the United States Air Force Academy (17%) and other military colleges and academies.[26] While it has become increasingly difficult for students to gain admission, it is also challenging for institutions to retain and eventually graduate those students.

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Increased use of classroom and campus technologies over the past decade coupled with advances in data mining and processing, have yielded a potential solution to increase students' opportunities for higher education success. These discoveries also provide a roadmap for outlying organizations, including the U.S. military, to draw inspiration and to adopt transferable practices. This section will define what is meant by the term learning analytics, how these are generated; and show how leveraging existing institutional data enables universities to forecast student performance, inform decision-making processes, and offer strategic interventions before individuals completely disengage from the curriculum, fail a course, or become academically disqualified. The powerful capacity of learning analytics and predictive modeling technologies are then cast against the challenges and extraordinary responsibilities that accompany the use of these tools. The section concludes with recommendations for the transferability of these technologies in the service of developing future military leaders.

Incorporating classroom technologies in meaningful ways serves both students and faculty. When the appropriate mix of technologies is curated within a course, faculty presence, student engagement, and overall cognition are potentially enhanced.[27] Examples of these classroom technologies may include the aforementioned videoconferencing and virtual lectures (synchronous or asynchronous), the use of audience response systems (e.g., remote devices that transmit students' responses to question prompts and polls), digital textbooks, quizzes, and homework assignments. In addition to strengthened faculty presence with the support of technology, student engagement with virtual learning tools generates both perceptible and imperceptible data. Until recently, data that did not directly inform class points or final grades remained broadly unutilized, often dismissed as "data exhaust" left behind by students' interactions with course content.[28]

Innovations in data mining, machine learning, and influences from business intelligence have guided the transition of these previous latent data into the foreground as functional and valuable resources in service of student success and productivity.[29] Historically, student performance concerns were addressed after exams were administered, with a final grade serving as the primary indicator of success or failure. Now, increased use of technologies in higher education, coupled with computational advances, allow for the analysis of large quantities of data as a way to look forward or forecast student performance.[30] These learning analytics are defined as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs."[31] Learning analytics are generated using existing

institutional, content engagement, and performance data, and they are being used to assess and ultimately predict performance trajectories over the course of a student's academic career, or at the course level.[32]

Data that inform learning analytics are typically sourced from two places: learning management systems (LMS) and student information systems (SIS).[33] A LMS is a centralized web platform where course materials are stored and where online course activities take place. Thousands and up to millions of data transactions can occur within a LMS on an annual basis (e.g., login data, lecture video views, discussion board exchanges, quiz scores). A SIS enables a number of institutional functions including course registrations, financial aid management and tracking, and it serves as a central location to host student application data, transcripts, grades, and additional student-level information.[34]

When data are generated within these two systems, often a third system merges the information and produces the learning analytics. This may entail downloading a snapshot of activity from the day or the week, or in some cases, the programs are connected to a data warehouse where live data are refreshed instantaneously. In either case, learning analytics are dynamic, breaking away from the rearview mirror approach used to examine student performance for many years. Now, archived LMS data from past terms (defined as training data), inform statistical algorithms, which have the potential to forecast performance while a course is still underway; these are considered predictive analytics. Further, combining SIS demographic data with LMS performance data augments the statistical model, and provides more predictive accuracy. Though some variables are statistically insignificant, including multiple demographic and performance variables in the models allows for a holistic representation of the student. The variables informing the model transcend the student's Grade Point Average (GPA) or ethnicity; they are taken together in the analysis and prediction.

When universities weigh decisions and resources to support and increase student success, the power of forecasting student performance presents seemingly boundless potential and a level of empirical power previously unrealized without the developments in machine learning and data mining. Consider a student who begins their freshman year coursework, and at the midpoint of the first semester, the culmination of the student's college entrance exam scores, high school GPA, age, low attendance and homework completion rates across his/her courses (together with the other variables) generates a prediction that the student has an 86% probability of being placed on academic probation the following semester. Rather than

waiting for final grades to be assigned, decisions to act upon this information can instead be enacted to alert advisors, faculty, and the student, of available support to help put them back on a successful track. This process becomes iterative, with faculty developing courses that employ purposeful technologies and formative assessments (e.g., multiple, low-stakes quizzes and assignments that check for understanding); students engage with the course content; data from LMS engagement (e.g., video views, homework scores, often coupled with SIS data) inform the learning analytics, ideally triggering strategic interventions to support struggling students, and the process begins again.[35]

While learning analytics are being explored and adopted at many institutions, leadership and data governance demands are not tracking at the same rate.[36] Practical concerns include: data security and governance, the development and assignment of roles relating to learning analytics, and the designation of interventions, which may change students' performance trajectories. Organizational questions are being raised including where data governance, advising, and data-related decision-making processes should reside within the university. However, the ethical concerns and questions seem to far outweigh the operational functions of learning analytics.

Ethical considerations are emerging around the use of student demographic and performance data as a means to predict course outcomes. Questions surrounding the security, and even the ownership of student data in the learning analytics context remain unanswered.[37] What happens if student performance predictions are misused to discriminate against lower performers? Further, what are the implications of not acting on information that could positively influence students' performance trajectories?[38] Technical and systemic strategies are required in order to prepare for a future that includes big data and machine learning technologies as a way to predict student performance outcomes before the conclusion of a course/academic program. However, understanding the students' experiences and a specific focus on training those individuals responsible for delivering the interventions, messages, and academic support requires soft skills to counterbalance the hard data; this creates a cycle that has much to gain from informing and improving upon itself.

With increasingly distributed learning environments for students and military personnel, the use of technology enables access from all corners of the globe. Whether a team is working on a marketing pitch for a business course using virtual conference tools, or a soldier is learning how to navigate the Middle East by satellite using virtual reality, these

individuals are now equipped to develop their skills for a fraction of what it has historically cost learners and their institutions. Learning and predictive analytics provide an additional layer of value by enabling centralized observations of student and/or military personnel interactions with the technologies. This aggregated perspective avails the opportunity to mitigate underutilized resources while guiding productivity, at a distance, at a glance, and at scale for our ever-expanding and remote world.

## CONCLUSION

As Dennis Gabor suggested, the future cannot be predicted, though it can be invented. His assertion raises a number of questions for developing leaders. How will the digital revolution change the way we assess and train our military leaders? How do we best engage future leaders? How do we incorporate both subjective and objective methods in our leadership development programs? These are not mere philosophical ruminations as the answers have practical ramifications that are worthy of empirical study, particularly in the realm of leadership and the use of technologies. Many of the technologies and analyses in education have been adopted from practices in the business sector, as the for-profit world embarked upon the use of big data to forecast consumer behavior, revenue and manufacturing decades ago. While institutions of higher education are still in the nascent stages of understanding how using learning technologies, and the data those instruments yield, may be used to increase productivity and development, the blueprints are transferrable and malleable. Partnerships and information sharing between and among educators, administrators and military personnel has the potential pave the way for a deeper understanding of the relationship between technology-based learning and training, specifically for those who are charged with enhancing leader development and organizational effectiveness.

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# CHAPTER 2

## GETTING WHAT YOU INSPECT, NOT WHAT YOU EXPECT: LEVERAGING TECHNOLOGY TO ENHANCE LEADERSHIP ASSESSMENT METHODOLOGIES

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*"As for the future, your task is not to foresee, but to enable it."*
*Antoine de Saint-Exupery*[1]

### INTRODUCTION

The scientific community has given the study of individual military leaders a cursory look. In part, the dynamic, unstable nature of military units is to blame for the difficulty in going beyond limited examinations of military leadership. Multiple mission types, frequent transition between these mission types, and turnover of combat units magnify this instability. Even though unit membership may be relatively stable from year to year, officers typically change jobs frequently in order to accumulate experiences that promise to increase technical and leadership skills. In the United States Air Force (USAF), assignments for squadron command may be as long as three years (although the average is 24 months), yet the experience remains brief compared to similar civilian leadership roles. For example, leaders in other North American public, private and government organizations served in leadership roles for approximately four years, while also having similar amounts of time working with peers and followers.[2] Clearly, military leaders appear to experience more frequent job changes, have greater instability and transition between roles, and shorter job tenure than their civilian counterparts.

In addition to frequent job changes, modern military organizations must be capable of a rapid transition between mission types, and execute these missions in an environment that is unprecedentedly lethal, volatile and

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the United States Air Force Academy or the United States Department of Defense.

complicated.[3] Technology complicates this rapid change and lethality in two important ways.[4] First, technology enables military leaders to operate with greater physical dispersion over large areas and creates the need to sift through vast amounts of information for decision-making. Second, technology makes virtually all military operations visible to public media and subject to public opinion, creating an added consideration and stressor to a military leader's operational decision-making. In contrast to many private sector roles, military leaders operating in coalitions within adversarial nations must also focus on relationship building with external constituencies in addition to traditional followers.[5] The complexities of leadership in a military context underscore the need for accurate, reliable leader assessment to ensure the leader's skills match the tremendous demands of their mission and tasks.

## THE NEED FOR ASSESSMENT

USAF Colonel Allan Day noted, "If the research today is focused on near term projects, the tool bag of the future could be filled with a set of ineffective, obsolete instruments."[6] Colonel Day's comments imply that the future of leadership assessment must look much different than it does today. As leadership assessment research is integrated with modern technological assessment methods, the impact of context, culture, multi-level assessment and leader networks will presumably be amplified as organizations acknowledge the validity of a hierarchical, multi-dimensional view of leadership assessment.[7] To deal with this complexity, military organizations must create an environment where open feedback and iterative development are a routine part of leader development, yet not perceived as threatening. The USAF is one example where risk-taking, mistakes, and acceptance of critical feedback are not rewarded,[8] and may represent the current culture surrounding feedback and development for leadership assessment in many organizations.

Beyond the complexity of the leader's role and a suboptimal feedback culture, military organizations face challenges in leader assessment due to a broad, ambiguous definition of leadership. The military explicitly defines leadership values, but as is the case with the United States Army, these lists are often overly exhaustive. The US Army sacrifices parsimony with a thirty-item list of leadership competencies that encompasses "just about everything ... [which] makes it difficult to focus an institution's attention and resources on leader development."[9] According to Hutchinson, military organizations develop distinct ideographs, like "warrior" and "leadership," to help ground ambiguous, abstract values.[10] For the military, using leadership as an ideograph only adds to the ambiguity, because the term leadership is used in

reference to an array of behaviours including the process of command and control, the execution of operational skills, and a broad list of management functions.[11] Therefore, a starting point for accurate leader assessment, especially for military organizations, must be to more clearly define leadership and effective leader behaviours for its members.

Foreshadowing modern theory in 1840 and 1873 respectively, Carlyle's[12] focus on the role of individual leaders and Spencer's[13] ideas about the importance of societal influence inform today's more complex approaches to leader study. Modern literature clearly indicates that there is considerably more at play than measuring specific leader behaviours or traits. In many ways, leader assessment has always involved a network of related, but separate, perspectives on the efficacy of leaders. Carlyle suggests that leaders should be evaluated in terms of reputation, how they shape events, and with respect to the work they accomplish. While Carlyle's ideas on leadership are often dismissed as antiquated, his approach remains relevant to modern organizations–accurate leader assessment requires a variety of perspectives. Modern theorists increasingly acknowledge the complexity of what is simply called leadership by incorporating multiple, concurrent, contextual characteristics. Rather than claiming a simplistic definition is central to leadership assessment, the present effort considers the unique value that varying perspectives of assessment contribute to the study of leadership in organizational contexts.

Many leadership definitions and associated behavioural taxonomies generally account for leadership as an iterative and interactive process.[14] Mintzberg's qualitative examination of what leaders do plainly illustrates the rich nature of leadership as an interchange of interpersonal, informational and decisional roles. By its nature, influence must have an effect upon something or someone, suggesting the potential value of a leader's daily experiences as a primary source of development.[15] Leadership theory supports this assertion and provides grounds for developing leaders in the dynamic context of everyday work. This view is further supported by triadic views of leadership, which is the view adopted for this paper. A triadic view considers leadership as a process involving three critical elements: an influencing agent (the leader), an influenced agent (a follower), and the aggregated effects of pertinent antecedents (the situation or context in which the leader and follower interact).[16] Based on this view, development involves a progressive, logical growth toward an advanced state over time.[17] Our approach to leader development bridges the normal distinction made between leader and leadership development by incorporating the intra- and interpersonal elements that further substantiate leadership as a comprehensive process.

We offer only a brief summary of intrapersonal considerations, because we see greater opportunity for developing discussion around the interface of technology focused upon interpersonal interactions. At the intrapersonal level, we adhere to a developmental model that includes individual differences. At the interpersonal level, we offer ideas to comprehensively assess how the leader interacts with others. Our approach is supported by research that indicates that 30 percent of leader emergence is explained by relatively stable and immutable traits.[18] These results underscore the importance of what is explained (70 percent) by the interaction of the leader, follower and context. Even so, the intrapersonal characteristics related to leader development are critical to consider. To the extent that leadership can be learned experientially, it is critical to understand how leaders learn from naturally occurring episodes in the military work environment. Failing to account for dispositional characteristics unnecessarily wastes constrained resources on leaders that may be unprepared for developmental experiences. For example, developmental readiness addresses leaders' needs to integrate experiences and internalize thought as antecedents to subsequent behaviour.[19] With respect to understanding the intrapersonal level of development, it is indispensable to consider what predisposes leaders to think in general patterns. To understand how leaders continue to learn after developmental experiences, research shows that conscientiousness, openness to experience and emotional stability predict learning outcomes for structured developmental activities like reflection.[20] Similarly, agentic views toward development and self-awareness relate to how much leaders will learn from feedback and experiences.[21] The preceding findings underscore the importance of accounting for individual differences that specifically relate to developmental readiness, where self-efficacy, goal orientation, and mastery orientation all relate to how leaders think about and develop from their experiences.[22] With these intrapersonal characteristics in mind, organizations can make decisions to manage talent where experiential learning can serve as a primary developmental intervention. From here, we focus our efforts on interpersonal considerations of leader development.

## INTERPERSONAL CONSIDERATIONS TO DEVELOP LEADERS

A meta-analysis on the effectiveness of 83 leadership development programs showed that training interventions are the most effective when they have knowledge outcomes.[23] While knowledge has an important role in leadership activities (e.g., decision-making), leadership involves substantially more

than simply knowing what to do. We offer experiential learning as the key mechanism for leader development in military contexts. If for no other reason, experiential learning emphasizes opportunities for growth and development that are ubiquitous to military service. This emphasis can be compared to other approaches that rely on various interventions or training that teach leadership in explicit, although isolated, manners. While explicit approaches are of value in educating leaders, they also have limitations. Therefore, our developmental approach seeks to account for how leaders apply knowledge from past experiences to change their interactions in present and future experiences. This process is inherently iterative and interactive.

As a cautionary note, development is not a *de facto* outcome of experience, but rather represents an interactive process whereby effective leaders regularly mine accumulated experiences for valuable lessons to be applied to present and future work. Technology is invaluable for capturing and understanding this evolution, a point we will address in the context of each methodology. For now, it is essential to understand that leader development requires a theoretical model of work experience that integrates interactive qualitative and quantitative elements that accrue over time. To the extent that leadership is non-routine and unstructured, Tesluk and Jacobs propose that exposure to unique and diverse situations are particularly important for gaining experience.[24] Therefore, we propose that the interpersonal interactions in daily, real-world work experiences are a rich, yet often overlooked, context for leader development and assessment.

The fear that attempting to develop leaders is better than doing nothing may be a strong motivating force for many organizations. Nevertheless, we propose that resource-limited organizations would be better off developing and implementing informed assessment strategies rather than providing developmental interventions without requisite assessment. When organizations lack objective evidence that desired outcomes are achieved (i.e., that an intervention produced better leaders), organizations are vested in the interventions alone. Citing that an intervention prepared leaders for future challenges is highly questionable. In reality, many organizations recognize the need to intentionally develop leaders, yet they remain largely uncertain that leadership needs are being met.[25] Thus, a well-designed and scientifically informed assessment program is not simply a postscript to developmental interventions. Rather, our position is that the establishment of a proper assessment strategy is an essential starting point for developing leaders, after an organization has clearly defined leadership for its members. A clear assessment strategy is the most effective path to producing

evidence of leader growth, improved working conditions and superior outcomes for the organization.

Therefore, the authors explore leader development and promising methodological options to assess leader characteristics and growth. Furthermore, we provide conceptual applications where the contributions of technology may result in innovative, custom-tailored approaches to elevating the performance of leaders across organizations. These efforts have the potential to address similar issues in many organizations, though our specific emphasis is on those encountered in military contexts. Our approach is theoretically grounded in the specification that leadership consists of three critical elements: the leader, the follower and the situation. This triadic framework forms the foundation to inform inquiry into how military organizations can and should leverage modern technology to accurately assess leaders and to inform subsequent developmental strategies.

Even though organizations should not assume that leadership interventions are producing higher performing leaders without evidence, confidence in military leadership remains high.[26] The absence of tangible evidence of leader development blinds organizations to whether interventions actually improve leaders or organizational performance. To sustain public trust, military organizations have an obligation to improve leader assessment methods. Failure to do so risks the inability to justify the costs of developmental interventions and the loss of public trust. Perhaps the greatest risk is, despite interventions, military leaders may remain ill-equipped to tackle difficult problems or tasks and may forfeit national interests. To address this collection of issues, leader development requires considerable intentionality and a comprehensive, strategic approach to assessment.

## STRATEGIC ASSESSMENT

We define strategic assessment as a comprehensive measurement strategy that accounts for relevant antecedent and concomitant variables that give rise to leader performance and contextual change (e.g., climate and culture) that produce proximate (e.g., human capital) and distal (e.g., productivity and quality) organizational outcomes. Table 2.1 establishes boundaries for strategic assessment efforts to both define and frame leader assessment, while acknowledging the variety of perspectives that may contribute to leadership assessment. These boundaries create a clearer structure for leadership assessment that facilitates the specific applications of technology to leadership assessment itself, that we will discuss later. Building on the idea that leadership

is a broad, complex, interactive dynamic paradigm,[27] this framework offers a departure from the traditional, hierarchical approaches to defining leadership. In suggesting this approach, the authors rely upon diverse theories to inform the development of a comprehensive leader assessment and development strategy. Thus, for any leader assessment there is substantial need to begin with the end in mind by carefully considering the answers to questions like: Who is being assessed? What do we want to know about their growth as a leader? In what contexts does the leader work? How does the context affect leadership and outcomes? What kinds of developmental interventions are most effective? For organizations that are willing to give each of the preceding questions their full due, it becomes clear that a proper assessment strategy will enhance efforts to develop leaders. To be clear, leadership development can and does occur when assessment is lacking. Yet, organizations without clear and intentional assessment strategies are left wondering if valuable developmental resources reliably produce intended outcomes.

| Baseline Question | Potential Criterion | Potential Contribution |
|---|---|---|
| **Who?** | **Leaders, peers, supervisors, constituents** | **Dissimilar rater perspectives** |
| **What?** | **Traits, affective responses, knowledge, attitudes, skills, organizational outcomes** | **Topology of leader development** |
| **Where?** | **In situ, assessment centers, formal and informal feedback** | **Conditions for leader development** |
| **When?** | **Iteratively (i.e., before, during, and post experience)** | **Timeline and harmony of leadership development** |
| **Why?** | **Effectiveness of interventions, return on investment** | **Purposeful design of ongoing/future interventions** |
| **How?** | **Historiometric considerations, person-centered analyses, subjective evaluations, criterion-based evaluations, multi-level analyses** | **Conditions for and quality of experiences and assessment** |

**Table 2.1 Proposed Evaluative Structure for Assessing Leadership**

## *WHO SHOULD CONTRIBUTE TO LEADER ASSESSMENT?*

When assessing leaders, evidence shows that the source of data can be very important. Multi-source assessment strategies are based on the assumption that diverse rating sources provide dissimilar perspectives.[28] Even though raters (e.g., peers and followers) observe the same leader behaviours, they often diverge in their interpretation of it. Thus, multi-source assessment is an essential characteristic of effective leader assessment plans. In conjunction with the observation that rater types contribute varying perspectives, certain raters also provide more reliable assessments of certain criteria. For example, leaders' peers perceive characteristics that other raters often miss such as a leader's capacity for advancement, aggressiveness and originality.[29] Likewise, leaders' subordinates demonstrate greater efficacy when assessing relational aspects of leader behaviour, whereas peers are better at detecting how a leader produces value (e.g., team climate and productivity) for the organization.[30] In short, evidence shows that specific rating sources are more reliable for assessing certain criteria, suggesting the need to rely on diverse sources to assess leaders.

There are also evaluations that can and should rely on leader self-assessment, but sometimes the leader may be unaware of the dimension that needs to be assessed. Nisbett and Wilson suggest that people who report on their own cognitive processes do so based on *a priori*, implicit causal premises.[31] Implicit personality involves "the dynamic mental processes that influence an individual's behavioural adjustments to his or her environment that are not accessible via introspection."[32] Implicit personality is often conceptualized according to a needs-based approach. Examples include the need for achievement or the need for power.[33] James and LeBreton argue that implicit biases are evident in behaviour and influence a person's definition of problems, opinions of relevant stimuli, and expressions of reasoning that are consistent with implicit, underlying motives.[34] Furthermore, effects from development and other contextual factors suggest that major events can and do affect the stability of personality and resultant behaviour.[35] Leaders are likely to demonstrate personality changes and subsequent changes in behaviour resulting from maturation. Thus, due to intrapersonal differences, no two leaders will grow at the same rate even though they have similar, parallel experiences. Regarding the triadic approach to leader assessment, supporting developmental objectives requires assessment of leaders from multiple perspectives, to include implicit personality. At a minimum, organizations need to consider the efficacy of diverse rating sources (i.e., who) to provide a richer explanation of

leader growth and behaviour. In addition to using multiple sources to achieve this end, organizations should consider ways to assess the impact of the leader's implicit personality on their behaviour and effectiveness. Historiometric assessment, discussed later, offers one such avenue for military organizations to assess this dimension of their leaders' personality and behaviour.

## WHAT IS THE OBJECT OF CHANGE OR DEVELOPMENT?

Beginning with the assumption that developmental interventions are selected or designed to achieve some desirable effect or arrive at some specific state, it is crucial that organizations fully understand, identify and adequately assess expected outcomes. Education and training institutions need to focus on whether interventions produce the intended leader behaviours, not simply more knowledge about behaviours. Thus, strategic assessment serves the purpose of substantiating the need for and effects of developmental experiences while simultaneously adding value to organizations. Potential sources of value include a greater appreciation for the organization's leadership needs, the illumination of previously unobserved interactions and effects within the system and the surrounding environments, and a deeper understanding of leader development.

## WHEN SHOULD ASSESSMENT OCCUR?

To understand what is happening and why it is happening in the leadership process, correctly deciding when to collect data is critical. One challenge (among many) is discriminating and identifying genuine behaviours. For example, there is a general belief that politicians are far from trustworthy. A longitudinal survey conducted from 1993-2009 by Gallup found that 67% of American respondents think they can trust their government officials in Washington, D.C. only some of the time or never.[36] Offering one potential explanation for this mistrust, Tetlock found that 20th century American presidents managed impressions by altering their behaviour between election campaigns and once serving in the elected office.[37] Political leaders adjusting their behaviours to suit a variety of needs suggests interpreting observable behaviours has temporal components that must be addressed. Tetlock addressed this problem by dividing data into separate time periods (i.e., between five months prior to the election and the election, the first month of the president's term in office, and the second and third years of tenure).[38] This example substantiates the importance of appropriately dividing a leader's

behaviour along a time span. Military organizations can enhance their assessment strategies by similarly differentiating relevant time periods to assess specific aspects of leader development

## *WHERE IS ASSESSMENT NEEDED?*

Going hand-in-hand with the question of "why" assessment is needed is the question of "where" it is needed. In resource-constrained environments, it is impossible to assess everything. In fact, even if we could, it would provide so much information that it might be impossible to act on. Instead, we need to understand where we need to focus those efforts. In the military, there are many points where this assessment can take place (e.g., junior to senior levels, or sub-unit up to the organizational level). Military organizations must identify their frame of reference in order to ensure the assessment strategy is sound, and that decisions are based on a specific, intended usage of the information that will be obtained from assessment results.

## *WHY IS ASSESSMENT NECESSARY?*

Assessing development is fundamentally different than assessing performance. Combined with a romanticized concept of what it means to be a leader,[39] a natural consequence of leader evaluations is comparison. The time-honored tradition of head-to-head competition is a fundamental part of the human experience.[40] In any variety of sporting events, the person that crosses the finish line first wins. However, judging outcomes by this standard alone fails to tell the whole story. If two flying squadron have comparable mission effectiveness rates, one might simplistically conclude that the two squadron's leaders are on par with one another. Yet, this objective comparison reveals little in terms of the leadership that created those outcomes. In a unit of experienced veterans such a performance might occur in spite of the leader's efforts. In a less experienced unit, considerably more effort and expertise might be required to produce the same outcomes as the leader develops inexperienced followers. Therefore, developmental assessment offers a distinctive perspective that objective assessments routinely overlook.

## *HOW SHOULD WE ASSESS LEADERS, FOLLOWERS, AND THE CONTEXT?*

The complex nature of leadership leaves many with the impression that comprehensively measuring leader development is just not possible; or subjective at best. Yet, the creation and implementation of useful assessment programs

need not remain out of reach. As military organizations consider the need to provide greater attention to assessment, the method and form of data collection are increasingly important. As military organizations adopt a more comprehensive definition of leadership, it is necessary to consider compatible methodologies. Before the advent of contemporary survey-based methods, researchers relied heavily on epistemological approaches. Epistemological approaches largely fell out of favor as scientists developed a preference for standardized psychological instruments and accompanying statistical methods.[41] As a result, for a large part of the 20th century, researchers relied heavily on bivariate or correlational analyses to study leaders.[42] Whether this was a reaction to what was in vogue or the fact that this approach required researchers to identify large samples, leadership research heavily emphasized mid-level leaders.[43]

While correlational analyses have and continue to contribute to our understanding of leaders, the complexity of what leaders do, how they are perceived by others, and how their actions are interpreted considering various social contexts (e.g., climate and culture) requires additional measurement strategies. The combination of these characteristics suggests a vibrant environment that is far too complex to be predominantly studied with correlational analyses. Therefore, the authors offer an exploratory review of three alternative methods to traditional correlational approaches that appear promising for their potential in assessing leaders. Historiometric assessment, multi-level models, and latent class models offer a new direction to military organizations that enables more accurate leader assessment. The approaches account for the complexity of the triadic view of leadership by adding depth to the assessment of all three dimensions of leadership: greater insight into the impact of individual characteristics (historiometric assessment), acknowledging individual differences between leaders and sub-groups (latent class models), and more accurately assessing the leader in context (multi-level models).

## HISTORIOMETRIC ASSESSMENT

Typical data collection approaches, which rely upon the administration of structured tests, require large field samples to achieve desirable thresholds of statistical power.[44] Generally speaking, structured tests are favorable for a variety of situations and are grounded in the scientific method. However, a problem arises from the use of survey-based instruments. Researchers have observed that survey-based approaches favor the assessment of certain types of leaders (e.g., mid-level managers and/or immediate supervisors in

organizations with traditional structures),[45] and in other cases, greater emphasis is given to past rather than currently active leaders.[46] Despite the many benefits of survey-based methods, such approaches are often limited because they tend to assess mid-level rather that senior- or low-level leaders, and tend to capture only a leadership snapshot even though the leadership process is continuous.

In a departure from traditional correlational methodologies, alternatives like historiometric research are receiving greater attention. Historiometric studies use scientific methodology to assess the validity of generalizations about historical events.[47] This approach permits researchers to evaluate complex relationships within specific, identifiable contexts. Thus, the utility of historiometric research methods is particularly suitable for studying leaders. Examples of recent historiometric studies used evaluate a variety of leadership phenomenon include the evaluation of leader's reactions to criticism,[48] the impact of eminent leader individual differences,[49] the interaction of Machiavellianism and leadership styles,[50] the impact of ideological leadership traits on violence incitement,[51] and the prediction of Chief Executive Officer (CEO) narcissism using CEO speech assessment[52].

Researchers typically begin historiometric studies by first identifying a sample of leaders. Thus, like correlational approaches, the objective often involves making inferences across leaders and not necessarily to understand a particular leader. The historical perspective has traditionally driven data collection methods and necessitated that leaders studied are of substantial status. The absence of this status meant the quantity and quality of data were likely to be insufficient. As an example of developing criteria for historiometric study, Eubanks and colleagues required sources to be academic biographies with evidence of scholarly work, that the subject or family members did not author the works, and that multiple biographies were available for each leader.[53] For examples of general questions addressed in a study of leader-follower relationships, see Table 2.2

| |
|---|
| **1. How much did the leader contribute to society?** |
| **2. How long did these contributions last?** |
| **3. How many people did the leader effect?** |
| **4. Did the leader initiate any mass movements?** |
| **5. Was the leader's agenda maintained when he or she left power?** |
| **6. Were institutions established by the leader still in existence?** |
| **7. What was the biographer's evaluation of the leader?** |

**Table 2.2 General Criteria in a Historiometric Leadership Study**[54]

In the design of modern historiometric studies, researchers establish controls to account for situational, biographical and leader characteristics.[55] Control measures are established to account for relevant temporal, cultural or historic effects that influence leader thought or behaviour.[56] Thus, the identification and implementation of controls serves the purpose of creating a reliable baseline from which inferences are made. The validity of historiometric research is therefore conditional on researchers making informed decisions about conditions that are likely to have substantial effects on outcomes (e.g., pre or post major conflicts or regime changes, organizational culture change efforts, or drastic organizational policy changes).

While historiometric studies are particularly advantageous for aggregating data from multiple sources, the approach is not without limitation. Researchers using historiometric analysis rely on *a priori* coding schemes to interpret substantial and heterogeneous sources of data. Researchers must carefully consider the sample and data available to ensure the study is scientifically rigorous. Because such data was more readily available for notable leaders of the past, finding the same quality and quantity of data for leaders that are more typical in organizations is a challenge. The type of data available for a notable leader from decades ago is likely substantially different than data available for a current, less notable leader. Therefore, consideration is warranted for how historiometric analysis might be adapted to meet present and more typical leader assessment needs. Creative application of technology may be the way to achieve a richer evaluation and assessment of the typical, modern leader. Fortunately, such data collection capabilities exist, and several samples have already applied this methodology effectively.

Using this methodology offers three notable advantages over more traditional methods. First, assessment of digital material in real-time allows the content dictionary or digital assessment database to function as the assessment instrument rather than a paper-and-pencil measure. This facilitates a simple, comprehensive validity assessment, and overcomes a common lack of construct validation for traditional leadership assessment instruments (e.g., surveys and questionnaires).[57] Second, inter-rater reliability is enhanced, because computerized coding is instantaneous, while standardizing coding between human raters may take weeks. Finally, digital historiometric assessment may have higher construct validity because the method is not influencing the responses, because the responses are an implicit measure.[58] One particular technique, using a digital dictionary to assess actual leader speech, reliably differentiated high and low narcissism among American CEOs of Fortune 100 companies and the "100 Best Companies to Work For."[59]

To apply such an approach in modern, dynamic military contexts requires robust data collection to account for potentially important contextual characteristics that may otherwise be overlooked in a less sophisticated assessment strategy. However, modern technology can easily facilitate robust data collection. The availability of digital data will only increase in the future, as US and coalition forces are already using wearable computers for data transmission during operational missions.[60] According to the *U.S. Navy Information Dominance Roadmap: 2013-2028*, rapid development of nanotechnology, advanced information technology, and next-generation internet will characterize US military data capability over the coming decade.[61] As John Antal accurately observed, "information systems are evolving and access to computing power to analyze big data is required at the soldier level."[62]

The primary focus of military organizations will be to use such advances to defeat their adversaries, but one may assume these advances also predict a steadily growing capability to use data for human assessment efforts. The increasing availability of advanced technology and wearable computers suggests performance data will be increasingly available for leadership assessment. While it may be premature to assess leadership effectiveness during operational missions, military organizations could begin using the vast amounts of communication their leaders exchange on a daily basis to assess trends in leadership style and monitor its impact on leader effectiveness, unit and sub-unit climate, organizational culture, worker attitudes, and both unit and individual performance. Similarly, military organizations could use archival data as a starting point for validating the application of historiometric assessment as a method to assess their current leaders using memos, letters, emails, performance evaluations, or writing samples as source documentation. A well designed and validated content dictionary or database to assess such information, while not simple to create, would make rapid assessment of such information very feasible. The adage "use what you have" carries weight here, and historiometric assessment seems to be a promising avenue for military organizations to begin applying that adage by using the wealth of available digital information for leadership assessment, and to capitalize on the inevitable growth in data technology and availability.

Simonton conducted a thorough review of the applications of historiometric analysis and declared its value to the study of leadership based on the potential to provide "an inventory of variables that can predict leadership in real-world settings."[63] One may assume that as military leaders are observed and evaluated, they do not always consider the evaluation construct. When assessments do not candidly reveal measured constructs, subjects are less aware of the analysis.[64] Historiometric assessment can reveal patterns of

behaviour that are consistent with the identification of implicit constructs by collecting responses from multiple sources.[65] Using historiometric analysis allows assessors to offset the tendency of leaders to fake behaviours by capturing sources of information outside the leader's awareness and the leader-follower dyad.

Perry and colleagues observed, "When the issues of theory, sources, controls, samples, predictors, and criteria are addressed in a thoughtful fashion, historiometric methods may provide one of the more powerful techniques for studying the nature of leadership and leadership performance."[66] Leveraging modern technology to assess a variety of leadership behaviours at multiple time points and at previously overlooked levels of organizations will lead to a more diverse assessment of leader samples. This diversity will improve the evaluation and extrapolation of implicit personality characteristics that relate to leader development, while providing the opportunity to infer the impact of personality on leadership in an improved and more practical emphasis. Borrowing from the naming convention for historiometric analysis, the authors propose the title of "nuncometric analysis" to describe historiometric techniques applied to modern samples and to typical leaders. The substitution of the Latin adverb "nunc" serves to focus assessment in the present, real-world context of leadership. Nuncometric analysis offers an alternative to investigating individual experiences with added respect for rich contextual elements. While conducting traditional correlational analyses are a viable method to understand organizational phenomena, such approaches neglect the nuance experienced by individuals engaged in the leadership process. Nuncometric analysis may provide a more accurate, reliable assessment of leaders, their behaviours, and the outcomes they achieve.

*Proposition 1: Nuncometric analysis maximizes opportunities to observe implicit personality through evaluation of multiple events across diverse contexts.*

*Proposition 2: Nuncometric analysis capitalizes on a subject's unawareness of constructs in question, resulting in a more accurate representation of the leader's actual development.*

*Proposition 3: Nuncometric analysis offers a viable, alternative approach to traditional self-report measures, and may be applied to modern leaders using the availability of both archival and recent data coupled with the ability for rapid assessment of digital material.*

## LATENT MODELS

Perhaps one of the most promising techniques for acknowledging the complexity of assessing leadership development is the use of latent growth models. Latent growth models allow an organization to assess a leader, group and sub-group's growth and development along critical metacompetencies (i.e., competencies that help one learn how to lead more effectively) such as self-awareness and adaptability. In particular, this methodology satisfies three critical assessment considerations highlighted by Day and Lance: the assessment can measure change at the individual and group level, it controls for measurement error, and it measures individual differences in change (e.g., rates of change and starting points).[67] Thus, latent growth models can be used to measure multiple domains across multiple times. Furthermore, latent growth models could be used across multiple groups with different developmental trajectories (i.e., sub-groups). The inherent multidimensional nature of leadership assessment highlights the need to incorporate latent growth models in future leader assessment strategies.

This technique has been applied effectively to understand the impact of social capital (i.e., interpersonal relationships that create value for individual employees).[68] Peterson and colleagues used latent growth modeling to measure changes over time in individual psychological capital. Latent growth modeling techniques enabled measurement of individual differences in psychological capital and linked those differences to both improved performance measures rated by the supervisor and to an objective measure of performance (i.e., individual sales performance).[69] The authors point to latent growth modeling as a valuable tool for performance management in organizations. Ng and Feldman further unpacked the social capital construct using latent growth modeling and discovered that higher perceptions of job embeddedness, previously thought to be beneficial, led to declines in social capital and those declines were directly related to a corresponding decrease in human capital behaviours, like training attendance and job rotation.[70] Given the ability of latent growth modeling to detect changes in levels of a particular construct, and to detect the impact of those changes on other phenomena or constructs in a specified network, this method was uniquely suited to a accurately assess the interconnectedness of social capital in an organizational setting. Leadership operates similarly as an interconnected social phenomenon. Thus, techniques like latent growth modeling more accurately assess the impact of such phenomenon. Military units would benefit from moving beyond traditional methods to those that accurately assess leadership's interconnected nature.

In a general sense, latent class analyses are an empirical method that provides an alternative to both correlational analyses and the qualitative

underpinnings of historiometric studies, because they provide insights into the unobserved heterogeneity of observations.[71] In contrast to correlational-based approaches that assume a somewhat uniform degree of homogeneity in data, latent variable approaches begin with the assumption that observations are different. Using empirical methods to cluster similar cases together based upon group-specific means, variances and covariances of observed variables allows for the identification of unobserved effects.[72] Based on these differences, previously unidentified clusters emerge and are useful for addressing substantive questions about individuals and their organizations. By identifying characteristic differences among unobserved groups, researchers are better positioned to understand all manners of problems.

Other studies that have employed variations of this inductive, person-centered approach include efforts to identify relationships between cluster membership and work outcomes,[73] the identification and description of profiles of leader perceptions,[74] the effects of relational and interpersonal skills,[75] personality profiles of effective leaders,[76] identifying profiles of leader behaviour,[77] and the relation of multi-source perceptions of leader behaviour to organizational outcomes.[78] As the preceding examples illustrate, latent class analyses offer a similar advantage to nuncometirc assessment by identifying previously unknown differences that relate to outcomes of substantial interest, but they offer a unique contribution to assessment efforts by extending that added insight beyond the individual leader to groups and sub-groups within the organization.

*Proposition 4: Latent class models are a more accurate way to assess leadership than traditional methods because they model the interconnected nature of leadership, and enable detection of the impact of individual, group and sub-group differences on attitudes and performance.*

## MULTI-LEVEL MODELS

Considering romanticized concepts of what it means to be a leader,[79] a natural consequence of leader evaluations is comparison. Even competency-based assessments like assessment centers can be used to hire, layoff, and promote employees–suggesting that some leaders are a cut above others. While the time-honored tradition of head-to-head competition is a fundamental part of the human experience,[80] leader assessment should not ignore the fact that individuals are routinely nested within groups (e.g., occupational specialties, shared developmental experiences and working groups). Failure to recognize and control for these effects violates the assumption of the independence of observations.[81] In military organizations, multi-level analysis is a more appropriate methodology for modeling the nature of leadership

compared to ordinary least squares regression or more traditional methods mentioned earlier (e.g., correlational analyses).

Individuals nested in work groups simultaneously embedded in a larger organization means individuals experience and assess leadership on multiple levels simultaneously. For example, in a survey of US manufacturing firms, 40 percent of companies had more than half of their organization working in teams.[82] Despite leadership being experienced in groups as a multi-level phenomenon, it is not typically modeled and/or assessed as a multi-level construct. As a consequence, the influence of leadership on performance and attitudes is not completely understood when multiple levels are not examined together. Chan suggests researchers examining multi-level phenomenon must adequately model their multi-level nature to accurately measure their effects.[83] As Klein and colleagues noted, "although multilevel theories are necessarily complex, this complexity may yield important practical insights. Multilevel theories illuminate the context surrounding individual level processes, clarifying precisely when and where such processes are likely to occur within organizations."[84] Studies where multi-level constructs added validity for predicting individual behaviour include collective person-group fit predicting individual performance and commitment,[85] collective efficacy predicting individual teamwork behaviours rated by others,[86] and abusive manager behaviour predicting individual employee behaviour two hierarchical levels below the manager.[87] Based on repeated demonstration of the predictive validity of multi-level constructs, Kristof-Brown and colleagues suggested future research explore multiple types of fit and multiple levels of fit in single studies,[88] and this call has gone largely unanswered. Similarly, we suggest researchers begin examining leadership as a multi-level construct, and military organizations begin assessing leadership as a multi-level phenomenon. This will bring further clarity to the gap between the leadership literature and the practice of leadership by more accurately modeling the structural and contextual factors that may mediate the impact of leadership behaviours on attitudes and performance.

Multi-level modeling has enabled the assessment of the relationships between equal opportunity climate, unit cohesion, individual job stress and job satisfaction in the US Army as a response to the highly visible issues of race and gender discrimination. Similar to leadership, equal opportunity (EO) climate is experienced by group members as a shared phenomenon, the effects of which are measured at both the individual level and the collective. This makes multi-level modeling a more appropriate assessment method than traditional correlational analysis. In the present example, equal opportunity climate positively influenced individual job satisfaction and negatively

influenced (i.e., reduced) job stress. Furthermore, EO climate also impacted the collective phenomenon of unit cohesion, which fully mediated individual job satisfaction and stress.[89] In other words, the collective, multi-level measurement of both EO climate and unit cohesion was necessary to understand the relationships between these variables and individual job satisfaction and stress. In the wake of the Abu Ghraib crisis, Schaubroeck and colleagues developed and tested a multi-level model of ethical leadership that demonstrated unit ethical culture impacted military units and their members at multiple levels. Their model demonstrated strong support that the way leaders embed a shared understanding of leadership impacts the unit at multiple levels, and the outcomes of this shared understanding–although a collective construct–also impact individual behaviour and cognitions.[90] Based on the EO study, Walsh and colleagues advised, "these findings point to the need for researchers to continue studying effects of psychological and higher level climates not only in future EO climate research, but also in research on other climate constructs."[91] Consistent with this argument and Schaubroeck's findings, we argue leadership effectiveness will not be accurately assessed without multi-level models. Similar to EO climate, leadership effectiveness is experienced collectively yet also impacts individual performance, attitudes and mission accomplishment. It would be wise for military organizations to begin assessing leadership as a multi-level construct rather than waiting for high visibility cases, like an equal opportunity challenge or the Abu Ghraib crisis. For leadership assessment, military organizations should apply these methods now.

> *Proposition 5: Military organizations should consult psychologists and/or other professionals who have the skills and training to design and implement multi-level models specifically for the assessment of leadership effectiveness within military units.*

Electronic portfolios are one example of a modern technology that may enhance an organization's ability to capture leadership data at multiple levels. Electronic portfolios are a medium for collecting all forms of assessment material and making them available digitally to an entire learning community. All members of a particular learning community can "look at one another's work, respond to it, reflect on it, and build on it."[92] If applied to leadership assessment, electronic portfolios offer an application where organizations may be able to leverage technology to enhance the feedback process and improve leadership skills at multiple levels of the organization simultaneously. This technique is grounded in Vygotsky's theory that social interaction is critical to learning.[93] Based on samples of undergraduate and graduate students in educational leadership, there is some evidence that electronic portfolios may enhance leadership development. In two separate samples, both

graduate and undergraduate students in educational leadership programs used electronic portfolios to create a culture where learning was public.[94] Rather than feedback only occurring between the student and teacher, it occurred at multiple levels of the organization and between students. Students were required to make all their work public and used consultancy protocols for guided conversation to share thoughts about leadership practice. As a result, students became both more skilled at and more receptive to constructive feedback, and participants reported changing their practice of leadership after program completion due to the exposure to new, and previously unavailable or unshared ideas.[95]

> *Proposition 6: Electronic portfolios offer a method by which organizations can enhance leadership development by enhancing feedback skills and leadership knowledge at multiple levels of the organization.*

More efficient use of distance learning[96] is another area where organizations can more effectively develop their leaders by making socio-cultural education more accessible to leaders at all levels.[97] Lawrence stated, "We cannot afford inertia that is so common in a bureaucracy. Rather, strategic leaders must advocate for educating, training, and rewarding (e.g., through career development pathways) sociocultural competence, and they must shape the organization and allocate necessary resources and trainee time toward this goal."[98] Distance learning could facilitate the development of cultural awareness, which is a critical, and under-developed leadership skill, for multinational military leaders. Just as global executives are selected and trained for their cultural intelligence,[99] the military could apply this model more broadly for those working directly with multinational forces or citizens. The US Army has already had success using desktop computer simulations rather than interactive exercises to train tactical decision-making.[100] In a sample of 52 infantry leaders attending a basic non-commissioned officer course, satisfaction and fidelity opinions of participants suggested the simulations had comparable validity for testing combat decision-making abilities.[101]

In addition to global deliverability, digital methods enable assessment along a range of competencies, can increase perceptions of fairness over a traditional assessment when the subject is able to request a review of their performance (which is not possible with non-video assessments), and enhanced rating accuracy by reducing assessor fatigue.[102] In other samples, a video portfolio coupled with a video simulation based on real-world events was successfully used as a methodology for enhancing learning in a leadership education program,[103] and for improving self-awareness and self-assessment ability.[104] While this method preserved resources and enhanced learning

of leadership in an educational setting, the value of such a method may be amplified tremendously in a military setting where the costs of implementation may be much larger due to the scale of military organizations and to the gravity and impact of typical military missions. Surely, more testing is needed to verify the validity and reliability of this method, but distance learning, computer simulations, and virtual/video assessments are promising techniques for teaching valuable skills at multiple levels of military organizations, especially if they are large and geographically dispersed.

*Proposition 7: Distance learning, virtual, web-based, and video assessments make leadership assessment more deliverable at multiple levels for large, geographically dispersed organizations.*

## CONSIDERATIONS FOR DESIGNING DIGITAL LEADERSHIP ASSESSMENTS

There is one final consideration in the application of all of these methodologies. Quantity does not equal quality, and the content of the simulation or assessment will certainly impact its quality. This is particularly important for organizations that may use portable or mobile electronic devices to implement their assessments. These two types of devices differ in that portable electronic devices include laptops and tablets while mobile devices generally have smaller screens and are hand-held, like smartphones. According to a meta-analysis by Arthur and colleagues, the leading scholars on mobile devices for assessment, mobile devices may be a reliable medium for assessment, but when the assessment is measuring a cognitive performance construct, like general mental ability, hand-held devices reliably produce lower overall performance scores and lower overall assessment favorability ratings.[105] This difference in effectiveness was not due to the difference in "tetherdness to the wall" between mobile and portable devices. Rather, four structural characteristics of smartphone assessments drive these differences: screen size, screen clutter, response interface, and permissibility (i.e., the degree of freedom a user has in deciding when and where the assessment takes place).[106] Specifically, for assessments evaluating cognitive constructs, these four characteristics of mobile device assessment increase the "construct irrelevant cognitive load" of the assessment, and resulted in lower performance and favorability scores.[107] These differences in scores do not occur when the construct assessed is non-cognitive (e.g., attitudes).[108] Given the widespread access to such devices in the general population and military populations, this is an important consideration for military organizations developing digital leadership assessments.

According to Arthur, there are few if any studies establishing the criterion validity of various constructs when using mobile devices as an assessment medium.[109] All studies to date compare the overall effectiveness relative to other assessment mediums, rather than the criterion validity of the assessed construct. In terms of leadership assessment, this means criterion validation is a necessary starting point for organizations designing leadership assessments delivered using mobile technology. In summarizing research through 2016 on mobile devices for assessment, Arthur offers six recommendations.[110] First, organizations should start the assessment design with a Level 2 device (e.g., smartphone) in mind to minimize the impact of the four structural characteristics. Second, assessment designers should explore where the breakpoint between effectiveness of Level 1 devices (e.g., tablets and laptops) and Level 2 devices occurs. Third, administrators should notify test takers of the impact of taking assessments under less-than-optimal conditions. Fourth, assessment designers should be wary of completing cognitive assessments on Level 2 devices. Fifth, simulations that introduce any construct-irrelevant cognitive load will create device-type differences. Finally, assessment administrators should offer liberal administration time for non-cognitive measures, allow takers to switch device type, and should track the device-type on which the assessment was taken. If military organizations apply the suggestions of this chapter, digital assessment can become a reliable method for delivery. In that case, all of Arthur's considerations above become central to the design of digital leadership assessments for each of the three methodologies discussed.

## CONCLUSION

All manners of organizations have interest in ensuring their leaders are prepared to confront and solve a variety of challenges. For many organizations, this means internal efforts to grow and develop leaders. Simply implementing interventions is not enough to know that growth and development are actually occurring.[111] At a fundamental level, organizations need to question whether interventions (e.g., education, training, motivational speakers, formal and informal feedback, performance evaluations) reliably produce valuable outcomes that meet organizations' needs. The age-old adage "you get what you inspect, not what you expect" suggests assuming an intervention meets organizational needs may leave that organization with a false sense of leader effectiveness. There is considerable irony that a proverb often intended for leaders is seldom applied to leaders and leadership contexts.

The improved insight into the impact of individual personality on leader behaviour enabled by nuncometirc assessment represents a valuable paradigm

shift. Likewise, latent growth models bring added clarity to leader and group/sub-group differences. Whereas typical correlational studies evaluate organization-centric associations of attributes or properties of people, work, and the organization, latent class models value the individual in the context of work.[112] Compared to correlational analyses, latent class models represent a departure from viewing people as sources of data (e.g., demographics factors or personality traits) to viewing them as a valuable resource for applied learning about individual experiences. Valuing individual experiences pays homage to the idea that individuals are active interpreters that thoughtfully interact with their work environments.[113] Finally, more accurate modeling of leadership via multi-level models provides a new, needed direction for leadership assessment. The thoughtful interaction of the individual with others in the context of work requires assessment techniques that can accurately capture the biography of continuous experiences that define the leadership process. Herein exists the intersection of historiometric analysis with latent variable approaches and multi-level models. Together, these three methodologies enable a more accurate assessment of the triadic nature of leadership, and modern technology provides a perfect medium for military organizations to leverage this accuracy in future leadership assessment efforts.

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# CHAPTER 3

## START AS YOU MEAN TO GO ON: A NEW WAY OF PREPARING COMMAND TEAMS FOR OPERATIONAL DEPLOYMENT

***Flight Lieutenant Bethany Gerling, MA; and Wing Commander Mark Brewer, MMgt[1]****

> *"The will to succeed is important, but what's more important is the will to prepare."*
>
> *Bobby Knight*[2]

## INTRODUCTION

The New Zealand Defence Force (NZDF) is proud of its adaptability and agility. As a comparatively small military force, this organizational dexterity is necessary to ensure the efficient use of limited personnel and material resources. Accordingly, the NZDF employs a flexible and agile approach to the resourcing of its international military commitments. New Zealand does not typically send large intact units on overseas operations, but instead tends to quickly form *ad hoc* teams to meet specific mission tasks. Although this approach allows the NZDF to make the best use of available personnel, it increases the risk of mission failure as these recently formed teams go through the turbulence of small group formation at the very time they need to be at the peak of team effectiveness.[3]

The NZDF defines leadership as "the ability to influence, motivate and enable others to contribute to the effectiveness and success of the NZDF, in an ethical manner."[4] Consequently, a substantial part of leadership is concerned with building and maintaining a team which can outperform the competition.[5] It follows that both leadership and team effectiveness are central to operational success against an armed adversary. However, it is also necessary to consider the "enemy within." Although we readily acknowledge external adversaries who try to frustrate our efforts, we frequently ignore the internal enemy, such as the team that fails to perform or is distracted by negative

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the New Zealand Defence Force.

internal dynamics. In this vein, Gushue describes the rather troubling prospect of an enemy who does not have to lift a finger to reduce our effectiveness when internal team dynamics can do this quite adequately for them.[6] This idea aligns with the domain model of leadership proposed by Hogan and Warrenfeltz who argue for a balanced focus on intra and interpersonal skills in addition to technical and managerial skills.[7]

This challenge leaves the NZDF with a clear problem to solve–how to retain organizational agility through the quick formation of *ad hoc* deployable teams, while at the same time mitigating the risk of unhelpful team dynamics which may present at a critical time. In other words, how does the NZDF hasten the process of small group formation and support its leaders by ensuring that command teams are not stuck with unhelpful patterns of conflict?

The NZDF has looked to hasten new team formation by enhancing its predeployment training with a contemporary framework for developing leadership teams. This framework leverages online surveys and modern psychometric methodologies, supported by a unique mix of team development and conflict management approaches, to accelerate the team development process. What makes this approach distinct is intervention at the leadership team level, rather than focusing solely on individual contributions.

This method supports a growing shift from purely functionalist leader-centric leadership development programs, towards an interpretive discourse based on collective, whole-of-team sense-making and empowerment.[8] A case study is presented which demonstrates how the NZDF has endeavoured to employ emerging processes and practices to solve the time-old problem of ensuring people work together well, in what is often a volatile and high stakes environment.

## *FROM LEADERSHIP TO TEAMS*

Significant emphasis has been placed on the contributions of leaders and the impact that they have on their team's performance and dynamics. This accentuation is in line with typical human resource pursuits in which people are selected, enlisted, trained, developed and also appraised as individuals.[9] Accordingly, there has been a clear focus on individual differences, especially those of the leader. Hence, intervening in the development and training of the leader has been seen as a key lever to improve the performance prospects of the team. Despite this prevalence, there are compelling arguments that an isolated focus on "the individual leader" has its limitations. The evidence for a clear and unambiguous return on investment for individual leader development activities is difficult to verify, leading to arguments that the typical

leader development activity fails to teach leaders how to effectively launch and maintain a team which can outperform the competition.[10] This view is supported by Petrie who purports that traditional leadership development has become too individually focused and elitist.[11] Instead, he advocates for a shift in focus on the conditions under which leadership will flourish within a network.

Despite the rise in functionalist leader-centric approaches, the importance of the "team" has long been acknowledged. Teams are described as being "vital and central to everything we do in modern life."[12] Society relies on teams to confront challenging tasks in a number of domains and the military is no exception. Indeed, there is a large, complex and growing body of literature devoted to the performance of teams. In common with the leadership domain, there are many and varying definitions of a team. A particularly useful definition for the military context is offered by Yammarino, who described teams as "complex, dynamic systems that exist in a context, develop as members interact over time, and evolve and adapt as situational demands unfold."[13] This definition is useful as it captures the complexity of teams and does not disregard the importance of context. It is broadly understood that teams achieve their aims through a range of processes that can collectively be called "teamwork."[14] As the context we operate in becomes more complex, it is increasingly recognized that, while ultimate responsibility rests with command, the commander must rely on teams to match the challenges this complexity brings.[15] Teams are particularly important in risk-laden military contexts where the dynamics of the team may be just as important to success, as the individual skills each member brings.[16]

## *WHAT DO EFFECTIVE TEAMS DO?*

In high-stakes situations, practices which reach beyond traditional leadership to team dynamics and group processes are increasingly required to ensure effective performance. Consequently, a growing number of studies seek to examine the myriad of processes which underlie effective teams. Kozlowski and Ilgen describe how effective teams need to combine cognitive, affective and behavioural resources which are captured by concepts such as team climate, shared mental models and collective learning.[17] In synthesizing findings from a vast array of literature on teamwork Salas and colleagues. uncovered nine guiding principles associated with team success that are amenable to intervention to improve performance.[18] These nine *C's* are: cooperation, conflict, coordination, communication, coaching, cognition, composition, context and culture. Salas also noted that to be successful, teams must perform both teamwork and task work. Teamwork involves shared cognitions,

behaviours and attitudes; while task work is more process and technically-oriented. There are clear links here between teamwork and the intra and interpersonal aspects of Hogan and Warranfeltz's Domain Model,[19] with task-work being more linked to the technical and managerial domains. Each type of work is necessary but not individually sufficient for effective performance.

Team effectiveness is influenced by the behaviour of both the team members and the team leader. Some models have accounted for the distinct effect of the leader within systems of team effectiveness, such as the Command Team Effectiveness Framework (CTEF) developed by the North Atlantic Treaty Organization.[20] Zaccaro and colleagues similarly illustrated how leaders influence team effectiveness through team cognitive processes, and through motivation, affect and coordination.[21] It was subsequently noted that in hierarchical organizations such as the military, the leader may have a more significant impact on effectiveness than in flatter organizational structures.[22] This perspective goes some way to bridging the gap between individualist and purely team-oriented approaches. It is also acknowledged that there may be other benefits of team membership aside from performance outcomes, including the fulfilment of psychosocial needs.[23] In fact, it has been argued that everything notable which happens in life is centred within social interaction, and because of this, people have a deep need to be accepted, respected, to gain and maintain status, and to have meaning, structure and purpose.[24] These motivations drive how people behave in a team context.

## *THE WELL-BEING OF TEAMS*

The psychosocial experience of teams is particularly important within the military deployment context. A number of models of stress resulting from operational deployments have incorporated factors not directly related to the experience of combat or high risk situations, especially those concerned with social interaction.[25] For example, the Deployment Risk and Resilience Inventory (DRRI2) captures a range of stressors related to unit social support and the experience of harassment.[26] The US Army Combat and Operational Stress Model also highlights new soldier integration as a specific issue of relevance to *ad hoc* teams as well as other psychosocial issues connected to cohesion and morale.[27] Bartone's model[28] similarly identifies boredom (alienation), ambiguity and isolation as key stressors, while Campbell and Nobel's model acknowledges social-interpersonal factors along with cultural environment as important stressors.[29]

Psychosocial factors have been identified as predictors of deployment-related well-being outcomes for New Zealand military personnel. NZDF research

across land, air, and sea deployments demonstrated that a quarter of respondents reported that living and working with the same people was a moderate to extreme stressor, and a similar number of veterans felt bad interpersonal relationships were a moderate to extreme stressor.[30] While interpersonal conflict can have an immediate impact on the success of military operations, the consequences of poor relationships on deployment can last well beyond the deployment itself. Psychosocial stressors typically do not receive much attention, in terms of preparation and mitigation, as the more obvious stressors associated with austere and high threat environments.[31] Therefore, improving the quality of team processes and interactions is likely to have a positive impact on the well-being and stress levels of deployed personnel by reducing a significant stressor.

## *WHY TEAMS FAIL*

Although the conduct of teamwork is ubiquitous, Curphy and Hogan contend that the experience of actually being in a successful team is relatively rare.[32] Hackman outlines a number of reasons teams do not live up to the performance expectations associated with teamwork.[33] These factors include: assigning a team work which is better done by individuals, managing the unit as individuals rather than as a team, failing to balance team autonomy with sufficient direction and procedural support structures, failing to provide sufficient support to meet objectives, and failing to ensure that the team has the right skills to succeed. Similar themes are identified in Curphy and Hogan's study of why teams fail, with explanations such as poor understanding of the operating context, resourcing and process issues, poor dynamics, and lack of tangible outcome.

Clearly, without sufficient thought and planning into how they operate, there is some risk that teams will fail. Some of the factors above suggest that the launch of a team is a particularly important time, where deeper consideration of objectives, context and resources is warranted. These elements are associated with the psychosocial needs for meaning, purpose and structure.[34] Other factors relate to how teams are maintained, the impact of the dynamics of the team, and how these reflect the need for acceptance, respect and status.[35] These requirements indicate that a structured and deliberate intervention for deploying leadership teams is warranted to mitigate the risks in both the launch and maintenance of these teams.

## TEAM INTERVENTION DESIGN

There is a long history of interventions to improve the way teams operate. For example, team building activities are ubiquitous in most organizations. However, there are subtle differences in the types of interventions that may be used. Kozlowski and Ilgen differentiate between the concepts of team training, team building and team development.[36] Team building is described as particularly difficult as it refers to attempts to change already well-established team processes. Team training is about increasing team mental models of knowledge and processes whereas team development is a focus towards the team developing its own helpful social structures and practices. This "ownership" of the development by the team itself is a particularly important aspect for teams that will eventually be operating far from their usual support structures, meaning the team can become more self-reliant when required. Consequently, the NZDF has introduced leadership team development workshops for all its contingent-based deployments. These sessions involve the senior command team and any other participants directed by the contingent commander (e.g., sub-unit commanders, senior enlisted personnel, liaison officers, key support staff and specialist personnel). Each workshop focuses on key factors which develop high performing teams. Delivery relies on a facilitative approach, leveraging elements of the NZDF Leadership Framework and employing a number of intervention models and strategies.

The primary and overarching model selected by the NZDF to guide the preparation of command team development for deployment is the leadership-team development framework (LTDF) developed by Darren Overfield.[37] This framework offers flexible guidelines which assist leaders in managing teams more effectively and aims at overcoming the key reasons why teams fail. The unit of intervention is the team rather than individuals, although the model does not preclude individual coaching or other leader-centric interventions. While other models of team functioning are complex and unwieldly, Overfield's model aims to balance theoretical rigour with simplicity, thereby supporting successful practical application.

The LTDF model is characterized by its phased and deliberate approach. In phase one, consideration is given to whether team development is appropriate. Is there a real team with the right members, clear direction and a supportive context? In phase two, deliberate consideration is given to establishing the right structures and processes to support effective teamwork, including a shared understanding of context and purpose, roles and responsibilities, and agreed norms. This focus on structure and process is balanced by also paying attention to the underlying dynamics of the team including the psychological roles within the team, the collective risks of derailing

(i.e., counterproductive) behaviours, cultural fit and dysfunctional dynamics. Subsequently, "coaching in real time" is important to continue momentum during phase three, supported by effective evaluation strategies to ensure sustained behaviour change is achieved where it is required. To address the conditions of both phase one and two of Overfield's LTDF model, the NZDF can choose from a selection of intervention types. Concurrently meeting the requirements of both phases, these strategies focus on the broad themes of structure and processes, or team dynamics.

## STRUCTURE AND PROCESS

Establishing clear operating structures and group processes can help accelerate team development. The NZDF selected models which address team context, structures and purpose, while also accounting for individual group needs. These needs may vary according to the situation. For example, how the team formation stage they have attained, or the impact of training restrictions and compressed pre-deployment timeframes. Team development strategies were based on Katzenbach and Smith's model of high performance teams, Grant's goal hierarchy framework, and Curphy and Hogan's Rocket Model.[38]

### *KATZENBACH AND SMITH: THE WISDOM OF TEAMS*

In their book "The Wisdom of Teams," Katzenbach and Smith identified a number of characteristics which set successful teams apart from teams who fail.[39] They suggested teams need to be especially disciplined in their approach to their work and that this basic discipline drives what makes teams work.[40] They further suggested it is important to determine very early on whether the group is a true team or just a working group. While working groups do share information and resources, and even support each other, they are only individually accountable–rather than mutually accountable–for team outcomes. This element of mutual accountability is critical to high performance teams, and requires everyone be accountable to the team, including the team leader. This aspect extends beyond simple information sharing, because the combined product of their work is a result of the efforts of all team members.

Discussing team characteristics aids in developing shared cognitions about the impact of collective work to be done and assists in building a shared intent. Having a clear and mutually agreeable purpose is particularly important. In successful teams, there is often an ambitious and resolute element to this purpose, with aspirational goals that centre on themes of excellence and innovation. Within NZDF contingents, an important part of this process is to

determine their team purpose and where they are mutually accountable. The leader's role is to set and reinforce this tone early on, and then maintain high levels of enthusiasm and buy-in to the team's collective purpose and aspirations across the length of the deployment.

## GOAL HIERARCHY FRAMEWORKS

Once a team is clear about the nature of their work and their purpose, they can then begin to consider how to implement this vision through specific goals and tasks. Goals can be described as an aspirational representation of the future that can achieve a team's aims via an impact on cognition, affect and behaviour.[41] Goals have similarly been described as "internal representations of desired states or outcomes."[42] Appropriate goal setting is associated with better group performance and there are a number of evidence-based mechanisms through which this is feasible.[43] Locke and Latham explain that goals can direct attention and energy towards pursuits that are pertinent to the goal; goals can galvanize the team such that they lead to greater effort in order to achieve the goal; goals impact on persistence by prolonging effort; and goals impact action by inciting people to use existing skills and knowledge to achieve the goal, or develop new skills and knowledge where there are deficits and the task is new.[44]

Goals setting must be used appropriately within an intervention for outcomes to be effective. The framework selected for use in NZDF interventions is Grant's hierarchical goal framework.[45] A goal hierarchy framework allows the facilitator to link higher order values and vision with more concrete goals and actions. This approach has a number of benefits. First, it shifts people from a deliberative mindset to an implementative mindset, which is better associated with self-regulatory strategies. Second, a visual representation of a goal hierarchy allows the team and facilitator to ensure that the goals are both vertically and horizontally aligned. Vertical alignment ensures that there is a coherent link between the higher order structures and the more concrete action steps. Thus, it is easy to identify if developed goals are horizontally aligned or complementary to each other and thus not competing. This helps to avoid "goal neglect" where people fail to pay sufficient attention to main goals, or alternatively, pay attention to the wrong thing.[46]

## THE ROCKET MODEL

Designed as a framework for boosting team performance, Curphy and Hogan's Rocket Model builds on decades of science on groups and teams. Incorporating a broad range of complimentary theories, the model follows

research by Ginnett; Hackman; Hogan, Curphy and Hogan; Katzenbach and Smith; and Lencioni. The model is designed to assist leaders in bridging the gap between knowing that teamwork is important, and actually having the skills to launch and maintain the performance of their team. The Rocket Model provides a framework for understanding the critical components of team functioning and performance in both descriptive and prescriptive ways.[48] It can be used to diagnose what is going well for a team, what is not going well, and identify prioritized remedies to subsequently address any deficiencies. These features of the Rocket Model align well with both the first and second phases of Overfield's LTDF.

There is a significant assumption about context which underlies the Rocket Model.[49] Teams do not operate in a vacuum, hence, the first step in the development process is to align the team members' assumptions about the context in which they operate.

The more their assumptions differ, the more risk that their behaviours may be misaligned. A first step is to determine, or decide, whether they are a group or a team. A team is characterised by common and interdependent goals, whereas a group is characterized by relatively independent goals and fates. It should be noted that one is not necessarily superior to the other. Rather, a good appreciation of the type of work being conducted is required prior to investing significant energy on team development activities. In the case of command teams, we can define them as "teams" due to the interdependent nature of their work and shared outcomes. It is also important to consider where lie the loyalties of the team. Is it mainly to this group or are there conflicting loyalties? This is particularly relevant where matrix organizational structures are in place. While this may be out of the team's direct control, it is important that all members have a full and shared understanding of this situational impact.

The remaining components of the model can then be addressed systematically by analyzing the response from the team members to questions designed to measure the performance of each element of the model. These include Mission, Talent, Norms, Buy-In, Morale, Power, and Results. Here, the descriptive and prescriptive features of the Rocket Model[49] are apparent, with clear guidance and developmental questions to answer for each area. Together, Mission (clear team objectives) and Talent (team size and composition) are the most important parts of the model, forming the first stage of the rocket upon which successful performance is based. Norms, Buy-In, and Power assess how the team agrees the work should be conducted, the levels of individual and collective commitment, and the access to the necessary resources. Morale considers team confidence and how well the group manages

internal conflict. Collectively, the elements of the model allow a team to discuss and confirm the structure and processes required to achieve results and effective operational performance.

## TEAM DYNAMICS

Attention should be directed towards the relational characteristics of the team and its leadership in order to meaningfully enhance effectiveness. Clarification of the purpose, norms, structure and processes, through the models and methods described above, also assists in promoting harmonious team relationships through improved functioning.[50] However, it is important to employ additional strategies to directly improve team dynamics. Enhancing the social processes that exist between individuals, dyads and larger groups is an important way to build capacity for effective relationships and ongoing performance because leadership is inherently a relational process among players across numerous organizational levels.[51] This approach speaks to the complexity of networks in which teams must operate.

Addressing team dynamics is more complicated than confirming group structure and processes. However, Cullen-Lester *et al.* explain a number of ways to improve this aspect of team functioning.[52] One is to increase the level of social skills or emotional intelligence at the individual level. Another is to enhance the ability of individuals to shape their own and others' networks. Still another method is to enhance the ability of the group to collectively create networks. This last approach recognizes that social relationships both within the group and external to the group have an important part to play in team effectiveness.[53] The NZDF command team interventions touch on each of these methods through a range of training activities, including the development of team charters, the examination of individual and collective personality, and an introduction to conflict management models and techniques.

### *CREATING A TEAM CHARTER*

It is important that teams are able to set a healthy tone early on. Wildman and Bedwell prescribe that it is important to shift beyond just imparting declarative knowledge about team functioning, to actual hands-on experience in teamwork and effective team dynamics. To achieve this outcome, they recommend establishing a team charter early on in the natural life of the team. This activity allows the team to put in place a structure and expectations surrounding teamwork.[54] It has been observed that teams which had developed charters prior to conducting an activity are more likely to be adaptive and deal effectively with subsequent disruption.[55] Prior planning helps team

resilience, allowing it to bounce back from difficulties. Hence, the development of a team charter is an important first step in NZDF pre-deployment interventions to improve team dynamics. These teams create an agreed-upon charter that visibly differentiates between behaviour that is desirable and that which is undesirable, and the team members agree to hold each other accountable to these expectations.

Facilitation of the charter writing process is almost as important as the creation of the document itself. The most beneficial outcomes can be achieved through the use of active learning principles enabling the teams to practice the interaction and communication strategies they will need during the deployment. This is achieved by providing team members with sufficient ownership of the process, and using a facilitative rather than instructional or directive style. It is also important to provide the contingent commander with the opportunity to shape part of the process so that deployment-specific concerns and requirements can be addressed. Senior command involvement in the process also ensures the opportunity to set the right tone for the operational development, and influence the contingent culture as early as possible.

## *THE IMPACT OF PERSONALITY*

The next aspect examined in terms of team dynamics is the impact of team members' personality traits. One of the tools the NZDF uses to explore and explain the impact of personality is the Hogan personality assessment suite. Irrespective of the tool, the impact of personality at both the individual and collective team level can be significant within team interactions. The NZDF recognizes this and leverages tools to support enhanced self-awareness and also the awareness of differences in the personalities of others. At the individual level, the NZDF recognizes the importance of leaders' ability to balance technical and managerial skill with intra- and interpersonal skills, and this is a major focus of ongoing leader development efforts. Increasing a leader's skill in the intra- and interpersonal domains leads to an enhanced level of strategic self-awareness, which is the ability of a person to align their reputation with their identity by understanding how others see them.[56] At the group level, it is also possible to use assessment tools to determine the balance of psychological roles within the team, including the potential risk of collective derailers.[57]

Overfield describes how an individual's personality–as indicated by the Hogan Personality Inventory (HPI)–will likely impact the types of roles they gravitate toward within the team and which roles they will likely avoid. A number of prevalent team roles are described, each having a different focus that include results, relationships, process, innovation and pragmatism.[58]

Recognizing these roles at the team level can assist leaders in identifying where there may be gaps which could impact how successful the team members are in achieving their goals. For example, having too many team members focused on innovation, with too few focused on overall results. Other teams may have an abundance of team members who are highly task-focused but pay little attention to harmonious relationships.

Personality tests are also used to assess collective team "derailers," or those aspects of personality assessed by the Hogan Development Survey (HDS). This inventory indicates the risks of an individual "derailing" under conditions of stress, complacency or boredom, all of which are relevant in deployment situations. If left unmanaged, these derailers may have an impact on the dynamics within the team, and consequently the relationships between the team and other entities, particularly if the team shares a number of the same derailers. These collective derailers may also influence how information is processed and how decisions are made. For example, a team that withdraws under conditions of stress and fails to communicate with others, or a team characterized by cynicism and mistrust of outsiders. Understanding the particular pattern of risk for the team assists in identifying preventative strategies to mitigate risk.

It is also important to examine the team's underlying values, as these can be an important source of unconscious bias and intra-team conflict.[59] Shared values can highlight areas of team strength and potential "group think," while identifying where values differ helps pre-empt areas of potential conflict and disagreement. Examples include a team high on the science scale that makes sound data-based decisions, but then fails to make an essential judgement in sufficient time because of missing information. This team may also be low in power and struggle to push for results. Alternatively, there may be divisions within the team where differences in values contribute to internal conflict. Collective leadership interventions allow team members to plan for differences and identify possible solutions and compromises in advance to allow for a more effortless management of conflict should this occur in theatre.

## *CONFLICT MANAGEMENT*

Despite a sound understanding of how conflict may arise from a clash of values, the competing demands, complex relationships and significant challenges teams face on a daily basis during deployment increase the likelihood that conflict will actually eventuate.[60] Consequently, the leader and the team must be suitably prepared to address any disagreements which may arise, both to ensure that performance does not suffer but also to ensure the team's psychosocial needs are met. Consequently, a key aspect of those NZDF leadership

team development activities focused on team dynamics involves examining the role of conflict in the team and planning for how it will be managed.

Conflict can range from mild tension and disagreement to more extreme aggressive behaviour. In all its forms, people can be uncomfortable with conflict if they do not have the skills to deal with it effectively.[61] The aim of team development is not to avoid conflict altogether–as this is actually considered dysfunctional[62]–but to make conflict a more constructive and positive event which is associated with better outcomes. It is acknowledged that a critical first step in managing conflict is to understand how it occurs.[63] There are a range of variables which may influence the process of conflict including individual perceptions, biases, conflicting values and beliefs, goals, roles and power dynamics. At the group level, norms are often a source of conflict, where violations of these can lead to disorder in the team.[64] Paying early attention to group goals, norms and processes will therefore assist in reducing the likelihood of conflict, as will group discussion of values and motivations.

Paying attention to conflict styles, and the mechanics of how conflict escalates and can be de-escalated, is also beneficial. Conflict styles are characterized by patterns of response to certain situations.[65] There is some debate over whether conflict styles are dispositional trait-like factors, or whether they are more comparable with learned strategies or distinct responses to situational factors. An individual's conflict style can shape the situations they find themselves in, hence there is likely to be an interactive effect.[66] There are a range of similar typologies of conflict style which, for the purposes of a development activity, can be captured by a questionnaire. In the NZDF, the Kraybill Conflict Style Inventory is used.[67] These interventions employ a conflict styles questionnaire as a conversation starter that presents the types of behaviour the team may see during conflict, rather than a precise indicator of likely conflict style.

Discussing the varying styles of conflict-related behaviour can raise the group's situational awareness to the presence of conflict and reduce the element of surprise when someone behaves differently from what is expected. This approach gives participants a chance to practice talking about behaviour in a setting where emotions are not running high and allows for deliberate and measured communication to occur. The patterns identified can also be related to previously identified personality factors and derailers. Specific attention is given to how conflict manifests and escalates, as well as the fact that every reaction is a form of conflict management, with some escalating and others de-escalating the conflict. Van de Vliert also highlights that some reactions are spontaneous in nature, while others are more strategic.[68] The NZDF employs the 'tornado' model of escalation which describes how conflict can

escalate through competing goals, underlying assumptions, defensiveness and corralling support, cognitive biases and beliefs leading to conflict-related behaviour.[69] The goal is to then lead participants toward deliberate strategic de-escalating behaviour to manage the conflict.[70]

## CASE STUDY

The NZDF has employed leadership team development activities in its preparation for the two most recent contributions to Task Group Taji. This deployment is a combined New Zealand-Australian training mission aimed at preparing Iraqi troops for counter-offensive operations against the terrorist group Daésh (Islamic State of Iraq and Syria [ISIS], Islamic State of Iraq and the Levant [ISIL]). The contingent comprises 100 New Zealand and 300 Australian soldiers who train separately before combining and then training collectively prior to deployment into the operational theatre. Due to the multinational and *ad hoc* task-based nature of the force, leadership team and overall contingent team development was considered an essential step in building cohesion and reducing the likelihood of intra-team conflict. The two development activities were led by the New Zealand Army Leadership Centre. While the specifics of the activities differed to meet the expectations of the individual commanders and account for the application of lessons learned from the first contingent, they were underpinned by the same foundations. In both instances, the initial emphasis was on accelerating team development within the New Zealand-based team to enable them to quickly reach an optimal level of performance.

### *FIRST CONTINGENT*

Setting team goals and establishing collective expectations of behaviour were the initial priority for the first New Zealand contingent. The senior members of all sub-units gathered to collectively consider their level of team effectiveness according to the eight sections of the Curphy and Hogan Rocket Model, to discuss and confirm contingent and sub-team goals and objectives, and to develop an agreed-upon team charter to clarify collective behavioural expectations. This activity was conducted within the first few weeks of forming as a national contingent. To account for issues of rank and provide an environment which would allow for full participation, the activity was conducted away from the pre-deployment training site in a conference facility with all participants in civilian clothing.

Initial reactions were positive, and the activity gave the New Zealand contingent commander scope to establish the expectations of unit members

and attempt to shape the culture of the team. The commander outlined his key points and objectives, which were then incorporated into sub-unit goals and objectives, as well as contingent expectations of each other, as a framework for establishing explicit team norms. While the discussions and outcomes were beneficial, the group struggled in assessing their current levels of achievement against the assessment criteria of the Rocket Model.[71] Although the framework provides a sound basis for planning where to place emphasis during team forming, it works best as a diagnostic tool for already established teams. For example, deploying personnel had difficulty determining their levels of morale and buy-in after only two weeks working together.

The remainder of the session focused on managing potential conflict within the group. Participants were invited to reflect on their likely behaviour when under stress and how any derailers might play-out during the deployment. The group was briefed using the Canadian Armed Forces models of conflict management which focus predominantly on de-escalation.[72] Previous examples of stress-related conflict that resulted in administrative removals from theatre were also discussed. The team was then presented with a number of notional scenarios where intra-team conflict had escalated to the level of verbal and physical abuse. In discussing and resolving these scenarios, the group began to establish and confirm agreed behavioural norms, and make some of the theoretical elements of the Rocket Model tangible and explicit. In concluding the activity, participants were each asked to confirm their key take-aways from the workshop, with responses clearly indicating deep engagement with the subject matter and consideration of the implications during deployment.

The initial New Zealand workshop was followed up by a combined Australia-New Zealand senior command team session in Australia just prior to deployment. The focus of this activity was on the potential impacts of individual personality on the team and employed the Hogan Leadership Forecast Series of psychometric reports. The format of the workshop followed that used for developing strategic self-awareness in the NZDF leadership development system.[73] Participants reflected on their personality assessment and discussed the benefits, challenges and implications of their score on the scale. The implications of this were then discussed, along with the potential interplay and conflicts with individual team members in similar or different locations on the scale. This process was then repeated for each of the scales across the three Hogan inventories.

This workshop was the first time some participants had been exposed to the use of an advanced psychometric tool for building self-awareness and collective team understanding. Their response was therefore less enthusiastic than

that of other team members as they grappled with the increased expectations of openness and introspection inherent in the activity. However, the overall outcome of the activity was positive, with a heightened level of appreciation for the strengths and challenges of other team members. General feedback reinforced the benefit of the activity to the team and the need for the session to be conducted as early as possible during the pre-deployment phase. Subsequent evaluation highlighted the need for all key senior command team personnel to be involved in the strategic self-awareness session due to difficulties in later integrating those who had missed the workshop, and for the contingent-level team development and conflict management sessions to occur later in the pre-deployment training program, once both national contingents had come together.

## *SECOND CONTINGENT*

Senior Australian contingent personnel and command team members visited New Zealand early on in the preparation of the subsequent task force rotation. This visit allowed the two leadership team development workshops to be conducted in reverse order to the first contingent. A full day was spent on personality-based discussions with eight members of the senior command team. This session initially followed the same sequence as that employed for the first contingent, and expanded from a focus on individuals to examining how the collective command team personality might influence the performance of the contingent. This approach maintained the emphasis on leader behaviour within the intra- and interpersonal domains recommended by Hogan and Warrenfeltz,[74] whilst simultaneously following Overfield's principles of balanced psychological roles within the team and acknowledgement of the risks of collective derailers.[75]

Collective goal-setting was also incorporated into this early activity to ensure the insights gained from the use of psychometrics were actively employed to increase team and operational effectiveness. The senior command team was asked to define the type of leadership culture they needed to develop within the contingent to support the achievement of their mission and supporting objectives. The team was challenged to push beyond broad sweeping statements into tangible and specific detail focused on what this culture would actually look like on the ground and what the command team will physically do to ensure it occurs. The team then reviewed their collective positions on each of the personality scales across all three Hogan inventories to determine what elements of their individual and collective personalities would support or challenge the attainment and sustainment of that desired contingent culture.

The session required frank and earnest self-examination by individuals and the command team collectively, with a focus on which behaviours they needed to manage to ensure the effectiveness of the contingent and achievement of the mission. The process also supported the development and clarification of group goals, norms and expectations as required in Curphy and Hogan's Rocket Model for high performing teams.[76] As the activity progressed, each personality scale was examined and where the majority or a large proportion of the command team scored high or low on a scale, the implications were discussed based on a "what, so what, now what" construct. For example, if the majority of the team scored low on a scale which indicated the potential for a high-level of task-focused behaviour by the group, then the team would discuss if this might challenge their ability to maintain an appropriate level of contingent morale, and if so, what measures they would put in place to mitigate and account for this. The result was a detailed list of team goals and tasks.

Once the general implications of individual and group personality on contingent effectiveness and mission success were examined, the command team was asked to consider any potential sources of intra-team conflict. This process looked at individual and team derailers, as well as opposing values and drivers on the Hogan Motives, Values, Preference Inventory (MVPI) scales.[77] As with the earlier contingent, notional scenarios of intra-team conflict escalating to the level of verbal and physical abuse both within the command team and the wider contingent were discussed. Examination and hypothetical resolution of these scenarios again assisted the establishment of group norms and agreed behavioural expectations. Initial reaction by the Australian Task Group Commander was that the two half-day activities had compressed eight weeks of team development into 48 hours.

A full combined Australia-New Zealand contingent leadership team workshop was conducted in Australia three months later, just prior to the final deployment of the task group into theatre. Here, the senior commanders of all contingent sub-units gathered to discuss and confirm the essential elements of leadership and high performing teams, with specific reference to the Domain Model[78] and the theories of Katzenbach and Smith.[79] The Rocket Model was not introduced or used in the same manner as the leadership team workshop for the earlier contingent, but activities focused on confirming many of its key elements, including mission and objectives, norms, and the management of intra-team conflict. The facilitators found the level of buy-in to the activity higher than for the first contingent, and attributed this to the earlier exposure to the psychometric tools by the senior command team. They therefore recommended increasing the use of psychometric tools to all sub-unit command teams within the contingent.

Overall, the leadership development workshops for both contingents were found to be a beneficial part of their preparation for deployment, with anecdotal feedback almost exclusively positive. Hosting the senior command team's strategic self-awareness session as early as possible and well before the larger group Rocket Model or team-based workshop appeared to be more impactful and assisted in building broader support for subsequent activities. This observation aligns with similar experiences in the use of the two intervention types across the NZDF. The need for earlier individual psychometric debriefs prior to the group Hogan's session was also recommended to provide time for self-reflection and sense-making, as was ensuring all the key personnel were fully involved from the beginning due to issues in integrating late arrivals. Central to the success of the interventions was the focus on answering critical questions about how the team was intending to leverage the insights gained from awareness of their individual and collective personality to successfully achieve their mission.

## LIMITATIONS AND SUGGESTIONS FOR FURTHER WORK

Anecdotal feedback indicates that the team development workshops are generally well received and have perceived utility. Regardless, there are some aspects of the intervention model that require increased attention. The first is the function of "coaching in real time" which is an important aspect of the framework that has proven more challenging to implement with teams that are geographically isolated. It requires that the team receives coaching as they engage in their work so that they are able to integrate the feedback immediately to improve team processes, and it assists the team to evaluate how well they are implementing their agreed-upon processes. It also has the benefit of building reflective practices.[80] Currently, the teams that receive the pre-deployment workshops become more self-directed during the deployment without significant scheduled follow-up, and this creates a risk that the team members may not adhere to their agreed-upon processes. This risk may be heightened when they encounter difficulties that they had not previously anticipated. There are a number of ways that this could be remedied. The first way would be to have a team member accept an additional team coaching role after having been suitably equipped with additional coaching skills. While this would increase internal team skills and ownership, it may not always be practicable within given time frames and may obscure the roles within the team. An alternative approach would be to deploy a coach into theatre at some point during the deployment to provide sufficient, impartial follow-up. Unfortunately, this would limit the coaching to a constrained

time period which may also limit the transfer of the skills. A more pragmatic method may be to utilize email, telephone or video to maintain a regular communication link with the team. Communications could be scheduled to take advantage of quieter periods so as not to disrupt operational activities. Additional reference material that guides reflective practices could also be delivered to the team via written means to walk them through reflective processes on their own. This ongoing coaching aspect of the team development now needs to be the focus of any subsequent development work on contingent-based leadership team workshops.

Ongoing improvement of the team workshop will also occur with formal evaluation of the programs. This has so far been limited to Level 1 training feedback based on Kirkpatrick's [81] training evaluation model, and commander assessment and comments within post-activity reports. Formal evaluation of the program is required to validate its impact and allow for comparison and assessment of the content and sequence of activities. As an example, reflections from those already in theatre have recently highlighted the need for more time on conflict management training. Evaluation may be somewhat constrained because the numbers deploying are small and infrequent. Hence, the most useful information will likely be gained from qualitative methods such as Brinkerhoff's success case method.[82] It is important to also validate the outcomes of the collective approach to this development workshop in direct comparison to individual approaches to assist in determining if it can be generalized more broadly of this approach across the NZDF's training system.

## IMPLICATIONS

The lens through which the NZDF views leadership development has subtly shifted. The command team workshops have increased organizational understanding of the theoretical underpinnings and limitations of collective leadership development. Experimentation throughout the two pilot programs also allowed for the identification of a number of lessons to be learned. Consequently, the leadership development workshop approach employed for both Task Group Taji contingents is now in use for other NZDF operational deployments. Pre-deployment training for the recent Royal New Zealand Air Force-led missions in the Middle East have included a two to three hour command team session with an emphasis on confirming the desired command team and contingent culture. In doing this, participants identified how their individual and collective personalities would support or challenge the team, confirmed group behavioural expectations, hypothetically resolved scenarios of intra-team conflict, and re-examined contingent objectives and

commander's intent. These shorter sessions continue to reinforce the key theories of Hogan and Warrenfeltz, Katzenbach and Smith, Curphy and Hogan, and Overfield.[83]

The two inventions discussed in the case study question the ongoing organizational reliance on purely leader-centric development strategies. To date, the NZDF has focused almost exclusively on the development of individual leaders against what Mabey and Carroll would describe as a "functionalist" leadership framework.[84] This traditionalist approach to leader development has benefitted the NZDF considerably. However, because of the constraints on throughput due to limited Leadership Development System course openings, the numbers of individuals developed and the workplace impacts are not occurring as quickly as had been anticipated. Each Service is now seeking to increase the delivery of individual courses and enhance coaching and mentoring programs to bolster the overall impact of leader-centric interventions. However, the introduction of more collective unit-based "interpretive" approaches helps mitigate any deficiencies in an almost exclusive focus on development of the individual, and may deliver greater benefit to the NZDF. The implementation of the two methods in a coordinated manner would certainly address a potential imbalance in leadership development focus, and is worthy of further investigation and experimentation.

Inherent within the lessons identified from the two contingent workshops were the clear benefits resulting from collective leadership development. The NZDF Institute for Leader Development is fielding an increasing number of requests for unit-based leadership interventions across a broad range of teams within the NZDF from small unit level teams to senior command teams. The interventions have consistently led to a perceived improvement in team dynamics and a perceived increase in unit effectiveness. However, further research is required to validate the actual impact of these interventions, and their benefits in comparison to functionalist leader-centric approaches. An additional challenge is the resourcing of collective interventions from within units established exclusively for the delivery of traditional leader development programs. However, the ability to focus on the individual development of better leaders, in parallel with collective efforts to build stronger organizational leadership, may justify an expansion to implement both strategies concurrently. This challenge provides the NZDF with another opportunity to demonstrate agility in the way it resources its strategic objectives.

## CONCLUSION

The NZDF's experience in using a modern structured intervention framework demonstrates that leadership development does not always need to be targeted solely on the leader, but can have an impact on performance with the team as the focus of the intervention. By progressing *ad hoc* teams through a team development activity, it allows them to attend to team development issues efficiently so they can also focus on mastering the technical skills they will need to achieve their mission. This approach has considerable benefit in the military context as it allows the team to practice the intra- and interpersonal skills it will need to sustain performance in the theatre of operations before actually deploying. These observations acknowledge that leadership is a social construct with significant implications for military teams and units if done poorly. Additional attention is therefore required to support the ongoing practice of these skills, to ensure they are sufficiently embedded and sustained. The results from the NZDF's leadership team interventions are positive, although largely anecdotal. Ongoing work is required to formally evaluate and validate the timing, structure and outcomes of the activities. However, they are now seen as a beneficial element of pre-deployment preparations, alongside those more traditional aspects of military preparedness training.

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# CHAPTER 4

## MILITARY LEADERSHIP IN ARTIFICIAL DOMAINS

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Advanced technologies are influencing the way individuals and groups collaborate, communicate and engage with each other as well as with the technology itself. New technologies are being harnessed to improve leader and team development for greater effectiveness in operational environments. We already experience significant challenges with leadership and team development among human beings; how can we effectively develop leaders and teams when machines are part of the team, act as mediators, or even lead it? At present, we are at a transition point in human-machine interaction. As we embrace new opportunities brought forth by emergent technologies for use in a variety of conditions and circumstances, we face challenges from the novelty of these technologies. We must develop and update our schemas for these technologies, which will impact how we interact with and use them.

Although the current body of knowledge about human-machine interactions is steadily increasing, many questions regarding actual interactions, communication, collaboration, and team building are still unanswered regarding the human within the interaction. It is crucial to identify how technology facilitates leadership and team-building between humans and machines. The current generation of tech users was born into a society where they can speak with devices and receive a response from them (e.g., Alexa, Siri, and Cortana). While future generations will have an even more immersive experience with machines, we still have an older generation that is learning to engage with these new technologies. At this transition point, there is no stopping the impact of new technologies on leadership, team building, and schema transformation. Yet, ongoing research can establish these changes and influence the current developments toward improved technology in a broad domain.

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* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the United States Air Force Academy or the United States Department of Defense.

## UNITED STATES OF AMERICA

This chapter focuses on the application of modern and experimental technologies in the areas of leadership and team-building, schemas, and attribution biases, as well as theoretical underlying concepts and ongoing research at the United States Air Force Academy (USAFA). The authors want to acknowledge that with the introduction of machines in teams, these underlying concepts and theories outline the multidisciplinary background and cross-disciplinary knowledge and collaboration necessary to establish the impact of technology in a human-dominant discipline such as leadership.

In the following sections, we briefly cover the foundational concepts regarding the impact of technology on leadership which undergird our work, outline the research projects we are conducting at USAFA to study leadership in artificial domains, and close with a discussion about how our research adds to the underlying theories and considers courses of action with regard to how the military can integrate technology into their organizations and leadership practices.

# TECHNOLOGY AND LEADERSHIP

Our work is built on a foundation of three concepts, which overlap and support an overarching theme of human-machine teaming in military contexts. These intertwined concepts–the Form Function Attribution Bias (FFAB), schemas, and leadership and team-building–are explained in greater detail in the following three sections. While our experimental and empirical research forces us to study these concepts independently in order to evaluate their influencing factors and determine their individual weights, the findings from each project should be combined and interpreted as a predominant theme. We think this approach is best for creating a general theory of human-machine teaming, as the many applications of modern technology and the countless scenarios in which it is applied makes it highly difficult to explore separately. The application of modern and future technologies is not regarded apart from the human, but in collaboration with humans as a team. Military leadership in combination with technology requires an interdisciplinary approach to mixed teams (i.e., teams composed of humans and one or more machines).

## *THE FORM FUNCTION ATTRIBUTION BIAS*

An attribution bias is a cognitive bias that refers to a systematic error made when people analyze their own or others' behaviour.[1] A bias exists when people make attributions regarding behaviours that may not accurately reflect reality. To describe the cognitive biases humans make when interacting with modern technology, we refer to FFAB, which explains the relationship

between attributions made regarding the functionality of a technology based on its form.[2] FFAB is thought to occur in modern technologies and has the strongest effect on embodied machines (i.e., robots) and technologies imitating humans or having a human-like appearance (i.e., avatars).

The tendency of humans to anthropomorphize, or ascribe human traits and intentions to technology, leads to perceptual errors and results in a biased perception. People do not seem to objectively perceive technology based on its functionality, but rather its represented form (i.e., appearance). For example, the authors conduct research using a Baxter robot, which is six feet in height and designed with long arms sculpted with well-developed biceps. The robot appears tall and strong, leaning toward an assumption that it is able to lift heavy loads in an industrial setting. Reviewing Baxter's operating instructions, however, proves to be rather disappointing; Baxter is only able to lift a maximum weight of five pounds. This is an example of an assumption of heavy lifting capability based on the robot's form, which does not accurately reflect the function of the robot.

## *SCHEMAS*

In psychology, a schema describes a pattern of thought or behaviour–a mental structure of preconceived ideas that organizes categories of information and the relationships among them.[3] Schemas can help people understand the world and a rapidly changing environment, as they build a framework of the world around them and create a system for organizing and perceiving new information.[4] People are able to rapidly organize new information into schemas, as most situations are processed automatically, as seen with stereotypes, worldviews, social norms and gender roles.

Symbolic interactionism is a sociological framework that views social reality in the symbolic domain, and is related to the psychological perspective on schemas.[5] People attach symbolic meaning to objects, behaviours, themselves, and other people, and they develop and transmit these meanings through interaction; people do not behave toward objects on the basis of their concrete properties, but on the basis of the meanings they ascribe to them. Blumer specified three basic premises of symbolic interactionism: 1) humans act toward things on the basis of the meanings that things have for them, 2) these meanings derive from social interaction, and 3) they are handled and modified by an interpretive process of people in interactions.[6]

The importance of interactions with others in the formation of self is reflected in Cooley's concept of the looking-glass self and Mead's assessment of the "me" and "I".[7] In a looking-glass self, we imagine how we must

appear to others, we imagine the judgment of that appearance, we develop our self-concept through the judgment of others, and we constantly monitor our self from the point of view of others. People internalize what they imagine other people think of them. In the two parts of the self, the "me" is similar to Cooley's looking-glass self and the "I" is individual and unique; "I" responds to the attitudes of others, while "me" is an organized set of attitudes from others which one assumes.

From this seminal understanding of self-concept, other researchers have considered the structure and organization of society in symbolic interactionism. Through symbolic means we make connections with and between the self and other objects, use language and other symbols to label and categorize these objects, and take on roles which are behavioural expectations attached to these labels.[8] While Blumer argued that structural features, like culture and roles, set conditions for action, he firmly stated that they do not determine action.[9] People do not act toward culture or roles, but toward situations, with social structure merely shaping the situation in which people interact.

## *LEADERSHIP AND TEAM-BUILDING*

Leadership and team building in human-only teams has been the subject of extensive research, yet still faces a variety of challenges. U.S. Defense Secretary Ash Carter and Deputy Defense Secretary Bob Work are currently advocating for the development of troop and machine teams through the Third Offset Strategy–a Pentagon directive that seeks to offset the advantages of our potential adversaries through innovative technologies to ensure U.S. military superiority, rather than trying to directly match the capabilities of our opponents.[10] When it comes to the notion of autonomous systems, artificial intelligence, or robots as teammates, it is often assumed that these technologies can replace humans and act as a human-like teammate. We want to emphasize that any technology should be viewed as an addition to a team through the unique capabilities and functionalities they possess. In a mixed team, machines are not a replacement for humans and their capabilities, so we must consider the nature of the communication, knowledge sharing and shared situational awareness between humans and machines.[11]

According to Katzenbach and Smith, a team is a small number of people with complementary skills who are committed to a common purpose, a set of performance goals, and an approach for which they hold themselves mutually accountable.[12] Effective teams have characteristics which make them distinct from groups, which are also made up of a small number of people committed to a common purpose. Teams have clear missions, high performance standards, assessments of members, high levels of communication, and

minimized interpersonal conflicts. The design of teams rests on meaningful tasks, boundaries, norms conducive to teamwork, and flexible authority. Teams also retain technical and functional expertise, and are proficient in problem-solving and decision-making. Finally, high-performing teams synthesize the inputs of individual characteristics, team factors, and surrounding organizational systems with individual and group effort, skills and knowledge, strategy, and group dynamics[13]

When we consider leadership in team research, we think of leadership as a function, leadership as facilitating team effectiveness, and the differences between task-focused and person-focused leadership. On a team, leaders function to solve social problems such as searching for information, and managing personnel and material resources.[14] Leaders also facilitate team effectiveness by managing individuals and their processes; a team leader clarifies a mission/task, establishes clear boundaries for accomplishing goals, manages work processes, and creates a stable team membership.[15] A final consideration in mixed human-machine teams is that person-focused leadership is much better for team-building than task-focused behaviours.[16] According to Burke *et al.*, there is a need to focus on "person-focused" behaviours that include consideration, empowerment, motivation, and transformational behaviours.[17]

## RESEARCH AT THE UNITED STATES AIR FORCE ACADEMY

Embedded within the Department of Behavioral Sciences and Leadership at the United States Air Force Academy is the Warfighter Effectiveness Research Center (WERC). Its mission is to support the warfighter through collaborative faculty and cadet research in the areas of Respect for Human Dignity, Readiness and Systems Warfare, Leadership and Organizational Effectiveness, and Human-Machine Teaming. In this section of the chapter, we discuss two research projects that develop and reinforce a culture that embraces diversity, understand the role in systems warfare and enhance readiness, understand and enhance the experiences and environment that generates leaders of character, and enhance shared situations awareness through human-machine communication.

### *PROJECT 1: THE INFLUENCE OF THE FORM FUNCTION ATTRIBUTION BIAS ON HUMAN-ROBOT TEAMS*

The U.S. Department of Defense's Third Offset Strategy identified human-machine teaming as one of the five technological building blocks that will enable its military strategic advantage. Our objective is to identify the unique

nature of robots and machines as teammates, and develop concepts and scenarios to introduce these kinds of modern technologies into human military teams, resulting in effective human-machine teams. Robots, in particular, have the ability to physically represent themselves through their embodiment in the human environment. We argue that people attribute functions to a robot based on its exterior appearance and we also argue that the attributions do not necessarily correspond to the true functions of the robot. The FFAB here focuses mainly on robots, but is thought to occur for other machine interfaces and avatars. This bias is thought to have implications for people's expectations, perceptions, trust and compliance. As the former Chief Scientist of the Air Force stated, "it is critical that there be effective two-way communication of the situation models between the airman and the autonomy."[18]

**Compliance with a request from a robot.** We are exploring the effects of robot anthropomorphic features on human compliance. Participants are asked by three different types of robots (see Figure 4.1), their respective tele-presence, and a human control, to complete an undesirable task based on research exploring obedience to authority.[19] Milgram previously conducted a series of studies showing that, despite moral and emotional distress, participants delivered what they thought were painful electric shocks to a test subject out of obedience to an authority figure, in this case, represented by a researcher dressed in a white lab coat. It is thought that the ultimate responsibility for the pain inflicted on test subjects was diverted to the researcher in the lab coat which explains why participants continued to obey the authority figure and inflict increasingly stronger shocks to the test subject.

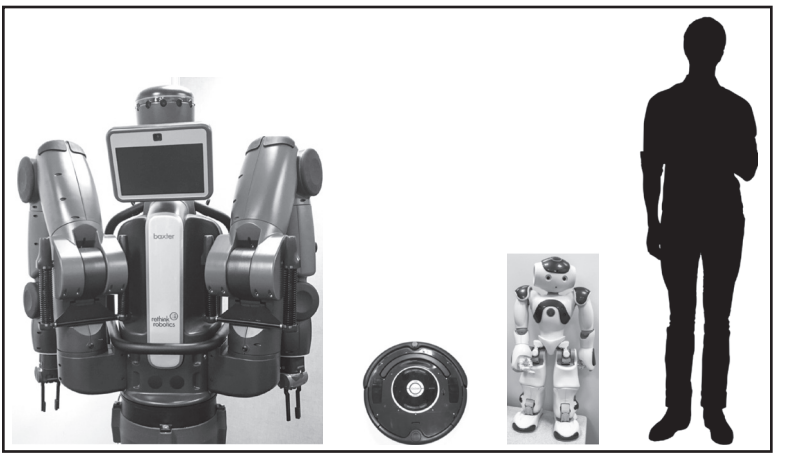


**Figure 4.1 Scale Representations of Baxter, Unmodified Roomba, Nao, and Human.**[20]

While Milgram's study showed deep insights into obedience to authority, his experiments would fail the test of ethical standards, specifically the protection of participants, for research conducted today. We are therefore replicating Milgram's obedience study with a different and ethically sound task: the authority figure in a lab coat has been replaced by a robot, and the task involves identifying tanks in a military-specific synthetic aperture radar (SAR) image. Similar to previous research in which human participants were asked by a robot to rename files, this study focuses on complying with a robot's commands to continue with the SAR image task.[21] The task is sufficiently difficult that participants feel challenged to practice at the onset of the task; however, the task is designed in such a way that participants become proficient quickly and feel ready to proceed to the next (non-existent) phase in order to test their new skills. Because the participants are supposed to feel proficient quickly, the study is intended to run significantly longer than it takes to become proficient with the task, creating a slight discomfort and a strong desire to move on to the next phase. As soon as the subjects express a desire to move on to the next phase, the robot responds using the original Milgram experiment phrases prompting them to continue with the task. To ensure compliance with ethical standards, we terminate the study after four prompts from the robot or an overall time limit of 90 minutes. To assess the degree of human compliance to the robot authority, we are measuring the duration of participant compliance with prompts from the robot, the number of requests to advance to the next phase, their performance, the expectations towards the robots, and any perception changes after the task.

We hypothesized that participants will initially comply with the robot's request to continue the tedious task; that subsequent participant compliance will depend on the robot's anthropomorphic design; and that participants will show higher compliance to humans and human-like robots and lower compliance to abstractly designed robots and remote robots on a monitor.

**Perception changes in short-term interactions with robots.**[22] Humans are quick to form impressions and make attributions of other humans; they do the same with robots during first encounters.[23] In a series of studies, we found that first impressions depend on a robot's form and appearance and can drastically influence the way a human interacts with the robot.

Haring *et al.* conducted a perception study with an android robot, designed to look like an exact copy of a human being and specifically modeled after a young Japanese woman (see Figure 4.2).[24] The study was conducted in Japan with 56 participants aged in their twenties who had never seen or interacted with this robot. In their first encounter with the robot, participants took approximately two seconds to realize they were not interacting with an actual

human being.[25] Results showed that participants perceived the android robot as highly anthropomorphic, highly intelligent, but rated it very low on safety, indicating that participants judged the upcoming interaction with the robot as potentially unpleasant or dangerous. These perceptions and attributions were solely based on the form of the robot. Following the interaction, participants reversed their stance on these three perceptions, showing significant decreases in anthropomorphism and intelligence, and a significant increase in ratings of perceived safety. Proxemics measures showed that people approached significantly closer to the robot in each of the three interaction trials.

Source: Hiroshi Ishiguro Osaka University and ATR

**Figure 4.2 Geminoid F Robot with her Human Template.**[26]

Haring *et al.* also conducted two follow-up studies: the first explored differences between the collectivist culture of Japan and individualistic culture of Australia, and another study used a different robot (a small humanoid named Robi) to evaluate the effect of robot anthropomorphism.[27] The researchers wanted to know if perceptions would change significantly with this smaller robot as they did with the highly realistic android robot.

Cross-cultural comparison data showed that, contrary to popular belief, Australian participants received the android robot quite favorably, but also challenged the functionality of the robot more and asked the robot difficult questions about its behaviour and beliefs (e.g., "Have you been to the beach?", "What is your favourite colour?", "Do you dream?"). These participant attitudes and behaviours were not observed in Japan. Also, Australian

participants viewed the robot as more likeable, more intelligent, but less safe than Japanese participants. Both studies showed the same decrease in anthropomorphism following interaction, but this drop was significantly higher for Australian participants. In addition to these explicit measurements, trust was measured through an economic game, which serve as a reliable and quantifiable measure of monetary trust. Results revealed that Australian participants demonstrated greater monetary trust toward the robot than the Japanese participants.

For the small humanoid robot Robi, it was shown that perceptions and attitudes are also subject to significant changes when participants interact with this robot type for the first time.[28] This is particularly true for the perception of animacy, which increased significantly. The study measured participant perceptions after each of two interaction trials, and showed no change in perceptions over the two interactions. While statistical data analysis is a good method to explore differences, similarities are difficult to measure. We believe that people build a mental model of a robot within the short duration of their first interaction and do not significantly adjust their mental model in the second. This study did not go beyond two interaction trials; it remains to be seen if such mental models and perceptions change over longer periods of time.

Collectively, these studies show that expectations and perceptions of a robot differ and change with its appearance. We hypothesize that robot appearance and the degree of anthropomorphism will have an effect on compliance with a robot's request. Based on the results of this study, successive research on compliance will explore the effects of perceived robot gender, voice (human versus synthetic), perceived rank, and authority of the robot. It is crucial to establish the expectations and attributed functionalities humans maintain towards a robot, as this could ultimately determine the effectiveness of their overall interactions. The factors influencing compliance with machines and robots are thought to be highly useful and could be employed in targeted scenarios where compliance with a robot or machine is either desired or should be questioned by the human.

These studies also indicate that the FFAB exists in terms of misperception and significant perception changes for robots. This bias does not only occur with robots, but also when interacting with autonomous systems and machines.[29] Because these perceptual errors and biased perceptions could lead to reduced acceptance and effectiveness of the technology, it is crucial to identify when and how FFAB occurs. While these studies involve purely short-term interactions, it is possible the FFAB will have broader implications on the effectiveness of longer-term interactions with mixed human-robot teams.

## *PROJECT 2: GOOD STRANGER BEHAVIOUR: ASSESSING FACTORS INFLUENCING SOCIAL INTERACTION*

Recent efforts in training and technology development have aimed to improve service members' interaction skills and adaptation to new missions focused on counterinsurgency, peacekeeping and humanitarian missions. In collaboration with the Defense Advanced Research Projects Agency (DARPA), we measured the usability of a social simulator prototype as part of their Strategic Social Interaction Modules (SSIM) program (see Figure 4.3). The SSIM attempts to improve success in social interactions by immersing participants in a virtual environment designed to train social competence, also known as "tactical social interaction," in ambiguous situations where individuals might not share cultural knowledge or customs with the local population.[30] These encounters have the potential to escalate quickly, so it is imperative that military members have the skills to be "good strangers" (GS) in order to communicate effectively, de-escalate a situation, and project authority and control.[31]

**Figure 4.3 The Virtual Social Simulator in Use.**[32]

The simulator's purpose is to provide a realistic, effective training tool to prepare personnel for interactions and decision-making in high-stakes, cross-cultural contexts. SSIMs place participants in situations by creating virtual environments and characters which exhibit common emotions, gestures and conversations. For example, cooperative characters might smile while uncooperative characters might scowl. Though this method of training is

emergent, it has the potential for a wide range of applicability and worldwide utility in various occupations. We propose that the use of a virtual social simulator is a cost-effective training mechanism capable of identifying candidates who have a higher aptitude of leading in cross-cultural environments.

**Interactions with the virtual social simulator**. In the social simulation scenario, participants were tasked to interact with virtual avatars of village locals to collect information and accomplish their mission to find a missing person. The simulator captured body movements and vocal commands of the participants, and the simulator analyzed these inputs to manipulate the behaviours of the virtual avatars. This human-machine interaction heavily influenced the results of the study; the "human" aspect of this interaction is understood using Mills' concept of the sociological imagination. It is quite relevant even before this simulation begins. He explains we can "hope to grasp what is going on in the world and understand what is happening to oneself as a minute point of the intersection of biography and history within society."[33]

Cadet participants came from all over the country, each one a product of their experiences in life influenced by their own race, gender, social class, and sexuality–these components make up their personal biography. As for history, they are volunteers in our armed forces, called upon to interact in ambiguous situations where they might not share cultural knowledge or customs with the local population. Personal biography and history create this socialization, yet, an individual's socialization does not stop after they reach adulthood–it is a lifelong process. Built upon this understanding, if it is assumed that certain personality traits will be successful in an unfamiliar culture and ambiguous situation, the success and safety of a mission should not be dictated by our soldiers' previous socialization. We can tailor a soldier's socialization by pinpointing weak areas identified in the simulation and suggest other areas, such as GS behaviours, de-escalation techniques, and situational awareness cues for our warriors to improve upon. This is the ultimate goal, but personality traits of the human can only take us so far when participating in the virtual social simulator. We need to consider ways participants develop attitudes and perceptions about the technology with which they interact.

In a recent study using the social simulator, participants expressed confusion about the scenario objectives and the extent to which they could use facial expressions, gestures, and their voice to accomplish the objectives, leading to ineffective interactions with the virtual avatars in the simulation. Participants knew they could interact with the virtual avatars as they would with another human being, yet their hesitation within the simulation showed that they were not completely immersed in the environment and scenario. We attributed participant confusion and ineffective interactions with the

simulator itself, simulated environment, and virtual characters on screen, to an issue with fidelity and assumptions about the form and function of the simulator. This was an issue with the FFAB and how participants' attributions were biased based on what they saw or did not see while interacting with the machine/avatars of the social simulator. Social interaction permeates nearly every aspect of daily life, an intentional use of multiple skills in order to obtain an objective, and can be applied in several ways, regardless of culture or setting. These social interaction skills become the most apparent when they are absent from an individual, group, setting, or respective modern technology (i.e., to some degree with individuals with symptoms of Autism Spectrum Disorder, the Indian head shake, chatbots giving "weird" answers, robots disregarding social norms). If participants are interacting with a simulated scenario and do not receive enough social interaction cues from virtual characters/avatars, our studies show that this limitation and issue with the FFAB hinders the effectiveness of the training device. In this case, not only does the social simulator need to increase participant immersion within the environment, the virtual scenario and avatars on screen need to increase in fidelity and ability to deliver social interaction cues so participants do not fall victim to the FFAB.

**Identifying leaders and teams using social simulator technology**. With increasing world-wide deployments and greater cross-cultural interactions, service members must be increasingly prepared to interact in a variety of culturally confusing, high-stakes environments.[34] As conflict becomes more dependent on human relations, the actions of military personnel have a larger impact on accomplishing mission objectives; the skills to successfully navigate social interactions are crucial for mission effectiveness. The military needs to identify optimal attributes and traits for successful face-to-face interactions in deployed environments, focusing on personality traits which correlate highly with leadership. Could we use a virtual social simulator to select personnel, build effective teams, and place individuals in leadership positions?[35]

In order to develop the skills to become a "good stranger", training must meet the demands of social interactions. Interpersonal exchanges are dynamic; both parties involved go through different stages to reach their desired objectives. These stages include trust-building, sense-making, and even trouble recovery when necessary.[36] An individual's ability to build trust or recover from miscommunication could reflect several factors such as one's educational background, personal experiences, and exposure to other salient information or cognitive schemas that can lead to priming. Priming occurs when "certain stimuli or events 'prime' information held in memory, making

it easier to bring to mind, or more available to influence our current reactions."[37] Good strangers must be able to recognize any learned or implicit biases that may result from priming in certain environments and overcome trained tendencies to become aggressive or unwilling to cooperate.

Prior military training has not included the skills required to become a GS or successfully navigate social exchanges, but recent research demonstrates we can better prepare our military forces to be both professionals and good strangers.[38] During conversations, GSs must be able to shift between the different stages of social encounters in order to accomplish their objectives. The SSIM program guides participants in using different social methods to reach objectives through participants' interactions with virtual characters. As participants see how the SSIM responds to their body language and gestures, they must learn how to be flexible when interacting with members of different cultures. Social simulator technology is advancing the way military members learn and encourage social tact in their members. The first step to accomplishing this mission across all services is to test this technology and its training methods in an experimental setting.

One mission of the U.S. military is to train and educate effective warriors. Integration of a virtual simulator could provide quality training to prepare personnel for deployed environments and various cultural contexts. "If we expect our warriors to be capable of using the weapons they have been issued [in this case, traits that make a warrior], they must practice on realistic simulators that replicate what they are going to face."[39] Technology advancements have made it possible to intervene at the intersection between biography and history; no longer are our soldiers subjected to the weaknesses of their own socialization, which are a culmination of opportunities and experiences influenced by master statuses (e.g., race, gender, social class, and sexuality) while growing up. Instead, the creation of a cost-effective social simulation training device for cross-cultural interaction presents an opportunity where service members can be virtually socialized into an environment before deploying to an overseas location, strengthening effective aspects of their socialization. Overall, the development of a social simulator to prepare service members for these environments may decrease these threats and potentially contribute to overall mission success.

## IMPLICATIONS AND FUTURE RESEARCH

Leadership and team building with all-human teams has been extensively researched in civilian and military contexts; however, many research questions are unanswered with regard to mixed human-machine teams. We

pursue two lines of inquiry and approaches for the examination of mixed human-machine teams. Furthermore, we argue that modern technology within mixed teams is evolving from a tool or instrument toward an interactive and participative teammate. Bernard Bass, a preeminent leadership scholar, predicted that leaders would make regular use of artificial intelligence to aid in decision-making, virtual work will be the rule rather than the exception, and technological advances would assist in understanding leadership and leader selection.[40] With burgeoning development of truly operational technologies in virtual and artificial domains, we are beginning to see initial frameworks that will eventually lead to the fruition of these predictions.

We are challenged to combine human cognitive strengths and the unique capabilities of intelligent machines to create teams that can adapt to changing circumstances and maintain shared situational awareness, both considered crucial for effective mixed human-machine teams. A true exploration of mixed team dynamics has only recently become technologically feasible. New artificial intelligence systems and autonomous agents possess the theoretical functionalities to become part of a human team given their strengths in computational power. However, we have not yet found a way to communicate and share knowledge with intelligent machines, and neither are the machines aware of the human on their team. Further, humans lack experience with such sophisticated systems and misinterpret their appearance and outer form, leading to biased assumptions and attributions about their actual functionalities. Therefore, the mental models and schemas created either do not correctly represent the machine or have to be updated and reevaluated.[41] The constant updates to our schemas increases the mental workload of the human and burdens interactions between human and machine.

## *SCHEMAS FOR INTELLIGENT MACHINES*

Schemas for intelligent machines and how humans interact with them have just begun to develop and are continuously changing. New emerging technologies have developed in such a way that we need to study and assess interactions with the technologies as we interact with humans. The constant adaption of our schemas and further developments of technology make it hard to predict what the future holds. Yet at this turning point, we have the chance to actively influence future technologies. As many societies have experienced, the introduction of technologies has changed our social interactions, information sharing, communication and mental models. As new technologies are integrated, the way we develop leaders and teams must also undergo a change. With further abstract and general knowledge of a topic, mental models change and people change their social interactions

with others and machines, based on the way they interpret and use those mental models.

Robots represent a unique case of intelligent machines given the mental models we have of them and how we update those models. Based on the research described earlier, we know that people interact with robots in a way consistent with their biases.[42] Most of the general public builds their mental model of robots from science-fiction, popular culture, and news reports about isolated cases of robots with special abilities or exterior appearances (e.g., android robots like Geminoid F, Boston Dynamics robots Handle and Atlas, the Terminator). It is therefore not surprising that mental models based on these second- or third-hand experiences are subject to significant changes when people encounter a physically present robot "in the wild" for the first time. What distinguishes robots from other intelligent machines and systems is that they have a physical presence. Having a body has been proven to make significant differences in how people make decisions.[43] For example, a study at Yale University assessed human-robot interaction in an office environment between a human participant and a robot that was either physically present in the office or virtually displayed on a video monitor. In one condition, the physically present robot motioned to a pile of books and then pointed to the garbage can, asking the human participant to throw the pile of books away. In the other condition, participants were asked to throw a pile of books into the garbage can by a robot displayed on a live feed video monitor. Although people were reluctant to throw books into the garbage, yet significantly more people complied with the request when in the presence of the robot than with the video feed.[44] The presence of a robot influences behaviour; we believe that through the FFAB, the form of the robot specifically will inevitably influence what kind of mental model we build.

Schemas guide expectations, learning and behaviour, providing a basis for action when one lacks either detailed information or the resources to process it.[45] Robots are a new concept for people and therefore new schemas are built for them. What also guides expectations and behaviour is the form of the robots. We believe the FFAB can become an important issue when initial expectations are either significantly under- or over-performed by the robot's functionalities. So far, not much research exists regarding the long-term interaction with robots which shows how schemas are adjusted and if the bias can be overcome with long term exposure and calibrated expectations. It is also important to consider the design of the robot in terms of its form and what kind of interaction and expectation this could create.

Regarding effectiveness, can we find a good balance for a robot's design in order to shape the right expectations for its functions? How can we design

robots for a mixed team, expressing well-calibrated interaction skills leading to more effective leader and team development? These remain open research questions as only recent technology has made it possible for robots to fulfill these functionalities. As we create mixed human and robot teams, it is important to take into account what the robot means to the human. This relates to Blumer's three basic premises of symbolic interactionism, which we apply to mixed teams: humans act toward robots on the basis of the meanings that robots have for them, the meaning of robots derive from social interaction, these meanings are handled in and modified by an interpretive process of people and robots in interactions. We know very well that people respond to a robot's attitude, in particular when the robot does something which does not fit the existing mental model. Short *et al.* conducted a study in which participants played a game of Rock-Scissors-Paper against a robot.[46] After few initial trials, the robot very obviously cheats. It was found that participants display a greater level of social engagement and make greater attributions of mental state when playing against the robot in the conditions in which it cheats.

## *HUMAN-MACHINE TEAMING*

Researchers have disagreed on the usefulness and achievability of a machine as a member of a team; however, we believe it is of crucial importance to differentiate the unique skillsets of humans and machines in order to achieve truly mixed teams, as opposed to human teams merely using sophisticated tools.[47] We need to stress that in our research, a machine team member is never referred to as a human equivalent, but rather as a new entity with a unique machine intelligence and skillset which integrates with human teammates. We stress the importance of technology in addition to teams as they possess unique abilities and functions. While foundational teambuilding theory defines a team as a small number of people, updated perspectives on team building need to incorporate technology in mixed human-machine teams and not merely replacements for humans.[48]

Several considerations need to be made for human-machine teaming. Emergent technologies already exist and will only proliferate in the armed forces. Leaders need to design guidelines for the addition of intelligent machines, robots, and autonomous systems to the warfighting environment. Recently, newly declassified USAF video footage shows an unconscious F-16 pilot saved from a crash into terrain as the aircraft's Automatic Ground Collision Avoidance System (Auto-GCAS) initiates an automatic recovery maneuver. The military plans to incorporate this autonomous system into their training and operational missions. The form and function of the Auto-GCAS lends

itself as a technological tool which works with the sole human operator.

In a study with Explosive Ordnance Disposal (EOD) military personnel, Carpenter studied the human operator relationships with their robots, with whom they controlled and worked with to disarm bombs in theater.[49] She concluded that, in some cases, soldiers had a tendency to treat their bomb disposal robots as if they had personalities. While the media and robot manufacturers gladly reproduce several stories about emotional attachments to EOD robots, these represent merely isolated cases. Research remains inconclusive about how much these types of robots are treated as a tool or teammate, and soldiers' emotional attachments to their robots remains to be studied effectively.

Machines, specifically the technology which we perceive as merely tools, receive orders and execute their tasks, uninfluenced by transactional or transformational styles of leadership. Machines as teammates, however, play a different role with differences on a gradient from tool to teammate. A human leader's prerogative will be to manage the humans within the team and how they interact with their machine teammates, just as they currently manage humans and their interactions with other humans on the team.[50] As humans competently manage person-focused interactions, machines need to become aware of the human. To create a truly mixed team, machines need to accommodate humans into the decision-making process, be aware of the human state, possess the ability to solve interaction and communication issues that accompany each unique application domain, and respond appropriately to human behaviour.

Human-aware intelligent machines will also need to recognize, respond to, and possibly execute leadership behaviours; therefore proper communication channels and guidelines must be implemented and applied by the machine during mixed human-machine interactions. Finally, we need to develop guidelines for a team or leader to override a human or machine decision. Related to these topics, future considerations need to include research about overall trust in human-machine interactions. Trust in autonomous systems, even trust in humans, becomes low after experiencing "misfires" or poor performance.[51] The old adage remains "trust your instruments, but verify."

## CONCLUSION

Current systems lack implementations of shared situational awareness, information sharing, appropriate communication channels from machine to human and vice versa, as well as shared mental models and interaction guidelines. Given the complexity of human interactions, we agree that none of

these items have a simple solution and cannot be treated as isolated items, but in context with each other to achieve true team capabilities and leadership. We can actively influence future technologies by researching and building the foundation for human-machine schemas, social interactions, information sharing, and communication.

As new technologies are integrated, the way we develop leaders and teams must also undergo a change; emerging technology can be leveraged as a medium for positive leadership development. Specifically, we need to explore how machines fit within our teams and how we can eventually integrate machines within the chain-of-command and military hierarchy. Within these new interaction models, we can begin to explore how technology facilitates team-building between humans and machines. In our future research, we will strive to answer the following questions and develop further second- and third-order effect questions: How do we integrate new technologies when developing leaders and teams? How do we integrate machines within the chain-of-command and military hierarchy? Where do machines fit within our teams? Ultimately, this research will improve leader and team development for greater effectiveness regarding military leadership in artificial domains.

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# CHAPTER 5

# LEADERSHIP IN EDGE ORGANIZATIONS: WHAT IT MEANS AND WHY IT MATTERS

*Lieutenant-Colonel António P. Rosinha, PhD**

## INTRODUCTION

Leadership continues to represent an important element for groups, as it directs behaviours in pursuit of common goals.[1] Thus, leadership is also considered crucial to enable team effectiveness.[2] The majority of research on bureaucracies focuses on formal leaders and centralized power in hierarchical structures.[3] The complexity of the situations faced by individuals and organizations has outpaced many traditional and theoretical planning and decision-making capabilities.[4] Consequently, traditional leadership theory is mainly about leading for efficiency and control in a relatively stable environment. Unfortunately, leadership theory has not yet fully embraced the changes brought by new technology-enabled organizations based on virtual teams to accomplish organizational objectives.

Several authors have called for a complex theory that explains leadership processes[5] because traditional leadership theory has limited applicability for the leadership environment of virtual teams.[6] Existing studies on the electronic environment suggest that leadership might be better viewed as a collaborative effort distributed among team members, characterized by shared and rotating leadership roles.[7] This perspective has challenged the assumption that leadership is an individual phenomenon, conceiving it more as a group quality or a set of functions that must be carried out by the group.[8] It is useful to view leadership as a dynamic social process and examine how certain individuals become emergent leaders in an interacting team. The new virtual team environment implies looking at leadership "as a social influence process mediated by technology to produce a change in group attitudes, feelings, thinking, behaviours, and/or performance"; Avolio and colleagues call this e-leadership.[9] Carte and colleagues suggest it "may come from any hierarchical level, be associated with an individual or shared by a group, and its locus

* The views expressed in this chapter are those of the author and do not necessarily reflect those of the Portuguese Armed Forces.

may change over time–consistent with characterizations of emergent leadership behaviours among members of self-managed teams."[10] For example, when a virtual team is formed within the context of a project, team members must communicate to evaluate the project requirements, to make decisions on processes and content, and to provide feedback on one another's work.

Edge organizations have unconstrained patterns of interaction and a broad distribution of information that allows them to rapidly share information and achieve high levels of shared awareness, which in combination with a distributed allocation of decision-making, may lead to collaboration, shared understanding and self-synchronization.[11] On the other hand, hierarchical organizations are industrial-age, stove-piped organizations that tightly control the patterns of interactions and the distribution of information, and centralize decision-making. Therefore these types of organizations do not promote broad information sharing or collaboration, and are unlikely to achieve high degrees of shared awareness and understanding.[12]

Network organization leadership can be investigated using the Experimental Laboratory for Investigating Collaboration, Information-sharing and Trust (ELICIT) environment (which will be described in more detail later). This research seeks to delineate potential variables that explain the emergence of leadership in Network Centric Environments (NCE). Our analysis focuses on the relationship between personality, individual, and collective characteristics (i.e., cooperation, collaboration and trust in information) and emergent leadership in hierarchical and edge organizational configurations for 170 cadets of the Portuguese Military Academy. Based on differences in hierarchical and edge organizational work, this research adds to the knowledge of the role of the leader in networked environments.

In our research, we seek to answer the following questions: Is emergent leadership related to ELICIT team performance (e.g., the quantity of work produced and performance quality)? Which traits or behaviours best explain emergent leadership in networked environments? Can personality traits be used as a predictor of awareness of the problem (a perceived work group quality)? Which variables explain the differences in hierarchical and edge organizational configurations? Do edge organizations exhibit higher levels of effectiveness as compared to hierarchical organizations?

# TECHNOLOGY ENVIRONMENT AND EDGE ORGANIZATIONS

The world is changing rapidly, to a large extent because of technology, which places considerable challenges on leadership. Technology is rapidly becoming more complex, and this complexity is occurring at an increasing pace. Each technology is associated with a particular organizational structure and has to be nurtured, nourished, and improved as a continuous process. Technological leadership differs from traditional leadership theory in that it does not focus on the characteristics or actions of leaders, but instead emphasizes that leaders should develop, guide, manage, and apply technology to different organizational operations to improve operational performance. Put simply, technological leadership is a type of functionally-oriented leadership practice.[13]

The inability of industrial age organizations to compete in the information age is a result of how those organizations deal with information in technological environments. An organization that does not promote broad sharing of information will not have well-informed individuals and organizational entities. The nature of the information age will require agility in all domains of warfare, particularly the cognitive and social domains. As a result of technological advances, the simultaneous improvements in informational richness and quality of virtual interaction are reducing the obstacles to collective action by individuals or groups of individuals separated by distance and time, or divided by functional and organizational boundaries.[14] We have left a time where geographically scattered individuals could only communicate if they were synchronous in time and space to a time when they can communicate even if they are asynchronous in time and space. The evolution of information exchange technologies has led to a fully networked collaborative environment (see Figure 5.1).

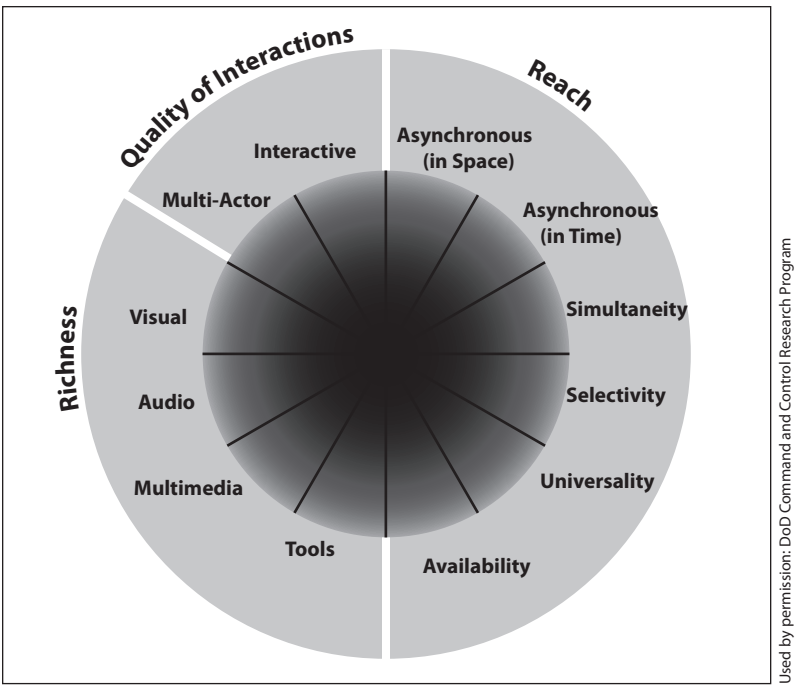




**Figure 5.1 Capabilities of a Networked Collaborative Environment[15]**

This technological environment "fully enables all of the attributes of reach, richness, and quality of interactions, allowing the utility of the information exchange to be significantly increased, helping to avoid information overload, improve timeliness, facilitate collaboration, and create the conditions for self-synchronization."[16] These information-related capabilities are all enabled by the "post and pull (information) approach" inherent to a robustly networked environment.

Edge organizations empower individuals, expand access to information through technology and through the elimination of unnecessary constraints, and greatly enhance peer-to-peer interactions. The edge organization is a solution to the increased uncertainty, volatility and complexity associated with military operations information age technologies have dramatically changed the access to information, which in turn has given rise to new forms of organization and approaches to both command and control and leadership roles.[17]

## INDIVIDUAL DIFFERENCES IN LEADERSHIP

Many early studies of leadership emergence and effectiveness linked leader personality traits to various leader effectiveness or performance measures.[18] Despite the fact that there is no consensus as to what individual attributes are associated with leadership, one of the characteristics found to be correlated with leadership emergence is conscientiousness. Work values are related to individuals' basic motivational patterns and, as a result, may determine to some degree what they do or how well they perform. Gordon's six interpersonal work values[19] can help us understand the relationship between personality attributes and job performance (i.e., effectiveness) in technological environments. Practical mindedness involves always getting one's money's worth, taking good care of one's property, getting full use out of one's possessions, doing things that will pay off, and being very careful with one's money. Achievement can be defined as working on difficult problems, having a challenging job to tackle, striving to accomplish something significant, setting the highest standards of accomplishment for oneself, and doing an outstanding job of anything one tries. Variety involves doing things that are new and different, having a variety of experiences, being able to travel a great deal, going to strange or unusual places, and experiencing an element of danger. Decisiveness concerns having strong and firm convictions, making decisions quickly, always getting directly to the point, making one's stance on matters very clear, and coming to a decision and sticking to it. Orderliness involves having well-organized work habits, keeping things in their proper place, being a very orderly person, following a systematic approach in doing things, and doing things according to a schedule. Finally, goal orientation encompasses having a definite goal, sticking with a problem until it is solved, directing one's efforts toward clear-cut objectives, knowing precisely where one is headed, and keeping one's goals clear in mind.

## COOPERATION/COLLABORATION AND TRUST IN NETWORKED ENVIRONMENTS

As a working relationship unfolds, team members develop expectations about individual workload, work processes and individual contributions.[20] Knowing who is "on the net," how well they are able to collaborate, and the quality of their information provides important insights into the study of patterns of interaction[21] and the process of influence. First, knowing who is "on the net" is the basis of trust. Second, working together toward a common goal is the basis for collaboration and provides insight about the clarity of the data and the quality of the information.

Complexity Leadership Theory[22] views learning and adaptation as emergent outcomes that result from the collective action of agents who are interdependently interacting at the nexus of diverse knowledge. A new leadership mindset that relies on technology is beginning to emerge. A complex systems perspective introduces a new "logic" of leadership into leadership theory and research by understanding leadership in terms of an emergent event rather than a person. A complexity view suggests a form of "distributed" leadership[23] that does not lie in a person but rather in an interactive dynamic, within which any particular person will participate as leader or follower, at different times and for different purposes. Such framing reflects the growing use of computational modeling in organizational theory[24] and the use of complementary modeling techniques in leadership research.[25]

Alberts and Hayes[26] argue that effective command and control and agile organizations in emergent environments require developing trust-based organizations and these three critical elements related to patterns of interaction: reach, richness, and quality of enabled interactions. Reach refers to the number and variety of participants. Richness refers to the attributes of the information provided by the various information sources and the quality of the content. Quality of interactions enables exchanges that involve the transfer of information and the ability to turn information into knowledge.[27] Moreover, leadership represents an important element for groups based on the formal leadership process.

## TEAM MEMBER INVOLVEMENT

Team member involvement seems to be the strongest predictor of team performance, suggesting that a more internal focus on member behaviours rather than on external leadership may provide insight into how to effectively facilitate self-managed team processes.

The leadership role in teams largely involves facilitating team processes to include initiating or formulating goals, encouraging interaction between all team members, finding the necessary resources to get the job done, encouraging diverse points of view, acting as a coach, clarifying team member responses, and organizing group thinking.[28]

Carson, Tesluk, and Marrone[29] found that teams that rely on multiple members for leadership performed better than those in which internal leadership is relatively scarce. This argument suggests that shared leadership benefits work teams beyond simply improving team processes.

## LEADERSHIP EMERGENCE IN TEAM ENVIRONMENTS

Studies on emergent leadership[30] argue that perceptions of leadership may be far more important than leadership as measured by group effectiveness. Emergent leadership tends to be related to the quantity of verbal activity; the person who speaks the most is likely to be perceived as the leader.[31] Emergent leaders are active participants who may be perceived by the group as possessing something (e.g., a trait or group of traits) that works to influence the group. It has been suggested[32] that the search to discover the key to emergent leadership should focus on identifying the specific personality traits that distinguish leaders from followers, as well as the traits that generally predict the overall effectiveness of a leader's team.

Personality accounts for important differences in the manner in which individuals behave in work situations. It is widely known that certain personality trait combinations are associated with emergent leadership in group interactions. These trait combinations are highly dependent on the task domain. Emergent leadership traits vary across different task domains, but are constant within that task domain. For a given domain, a leader can be predicted based on the personality traits of the individuals within the group.[33]

Emergent leaders may be just as important in facilitating team task completion as appointed leaders.[34] The manner in which a leader comes to power–whether formally appointed or emergent–may be "unimportant in comparison to the behaviours of the leader."[35] Zaccaro and colleagues[36] found that emergent team leaders (i.e., individuals rated highest on perceived leadership by their peers) were more adept than other team members at perceiving team requirements and selecting the appropriate behaviour to meet those requirements.

## CONCEPT INTEGRATION: A NETWORK LEADERSHIP MODEL

A comprehensive model (see Figure 5.2) that explains the differences in work and performance in hierarchical and edge organizational configurations may include three explanatory levels: individual qualities, group qualities, and the behaviours that characterize complex endeavors environments (e.g., trust, cooperation/collaboration and information quality).

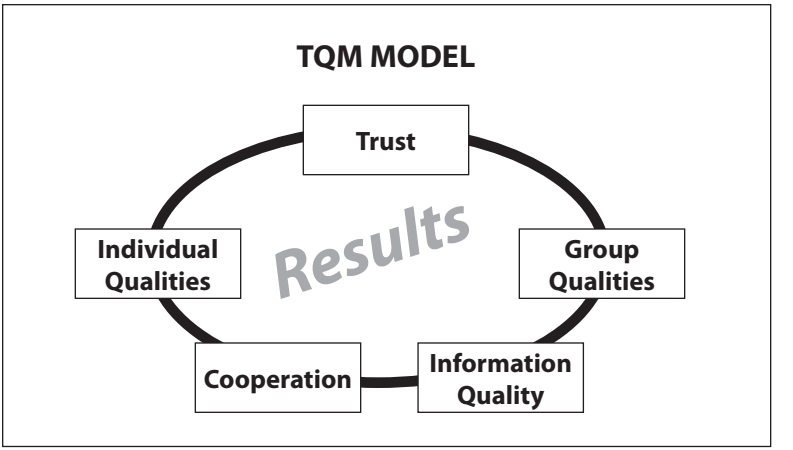


**Figure 5.2 Explanatory Levels of Performance Differences**

Several important aspects may be considered when analyzing this leadership paradigm in the ELICIT environment (see Figure 5.3). The present research intends to contribute to the definition of a network leadership model in five ways.

First, some personality traits may be significant predictors of emergent leaders in certain work group settings; therefore, we explored the possible relations between personal traits and awareness of the problem, leader effectiveness and emergence. We chose Gordon's Survey of Personal Values (SPV)[37] to assess the six work values considered to be most important for interactions with others. This questionnaire evaluates the following traits: practical mindedness, achievement, variety, decisiveness, orderliness and goal orientation. These values determine what individuals do and how they do it. This questionnaire was chosen because it examined a variety of socially relevant content related to leadership emergence, and it could be easily administered over a short period of time in the ELICIT environment.

The SPV questionnaire contains 30 triads, each comprising three statements. Each statement manifests one of the six SPV values. For each of the 30 triads, subjects were asked to choose the statement that was most and least important to them. The reliability data reported in the Portuguese SPV manual scale reliability coefficients ranged from .52 (for achievement) to .78 (for variety).

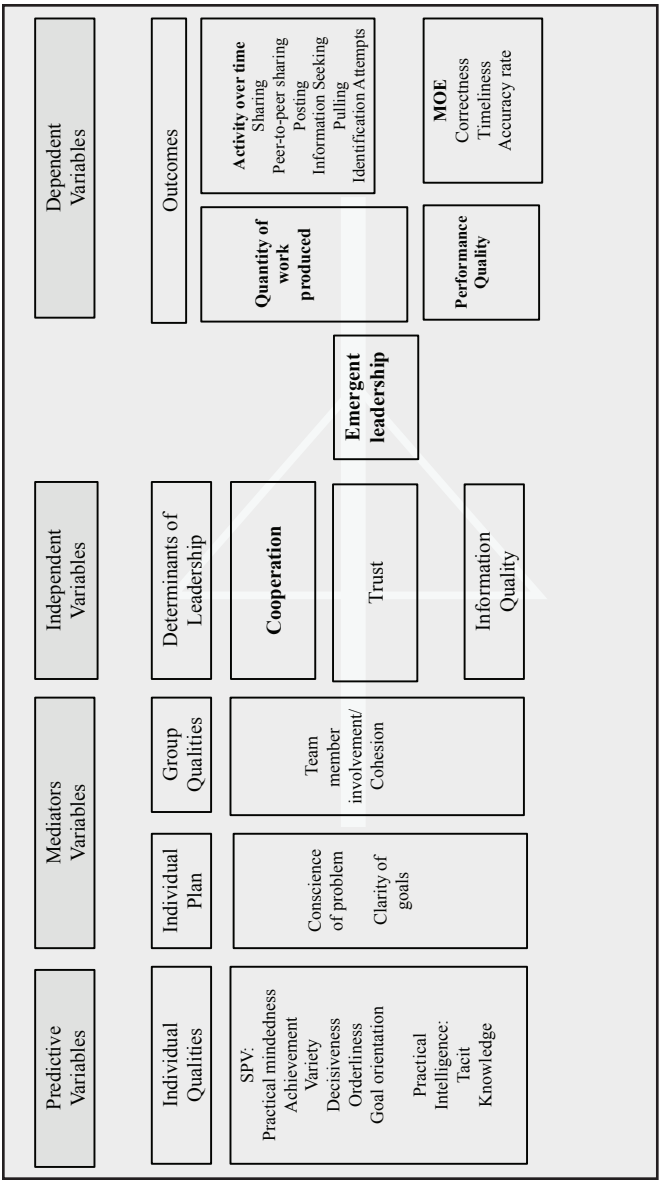


**Figure 5.3 Tested Model: The Mediating Effects of Several Perceived Qualities on Leadership Emergence**

Second, we believe awareness of the problem, which entails clarity regarding the goals to be achieved and awareness of the problem's evolution, may explain team member involvement and the emergence of leadership. Therefore, we tested this hypothesis:

**Hypothesis 1: Awareness of the problem is positively related to leader emergence in edge mode.**

The Multifactorial Leadership Questionnaire: Cooperation/Collaboration, Trust in Information (MLQ: CTI) scale was developed from the dimensions mentioned in the introduction. Those dimensions include individual plans, group qualities, behaviours that characterize complex endeavors environments (i.e., cooperation/collaboration, trust and information quality), and the process of leadership emergence. We also created a discrete scale to assess the quality of each behaviour, which specifically characterizes individual performance in teams. This individual performance scale consists of three items to assess awareness of the problem (see Table 5.1).

| Item number | Description |
|---|---|
| 1. | Awareness of what the problem entails |
| 2. | Clarity regarding the goals to be achieved |
| 3. | Awareness of the problem's evolution |

**Table 5.1 Awareness of the Problem**

Third, we examine team member involvement. This is the result of what people do in an organization; thus, it is the result of collective action and group qualities. Collective action is necessary to achieve organizational purpose[38] and could itself explain emergent leadership. So, we offer this hypothesis:

**Hypothesis 2: Team member involvement is positively related to leader emergence in edge mode.**

To assess the interactions established among the entire group, we created a team member involvement scale consisting of the 5 items addressing group involvement when working together towards a common goal (see Table 5.2).

| Item number | Description |
|---|---|
| 1. | Dedication and energy |
| 2. | Commitment |
| 3. | Teamwork |
| 4. | Involvement in problem resolution |
| 5. | Individualism |

**Table 5.2 Team Member Involvement**

Fourth, we believe cooperation, trust and information quality in this environment are important to explain the emergent leadership process. If the leader's role is to ensure social cohesion and reduce destructive conflict, then their ability to model and foster cooperation between team members is important.[39] Thus, we offer this corresponding hypothesis:

**Hypothesis 3: Cooperation/collaboration and trust in information are positively related to leader emergence in edge mode.**

We create a scale to assess the extent of an individual's cooperation/collaboration within the team. This cooperation scale consists of 5 items that assess collaboration when working together towards a common goal (see Table 5.3).

| Item number | Description |
|---|---|
| 1. | Collaboration |
| 4. | Sharing information |
| 7. | Sharing awareness |
| 11. | Information exchange |
| 16. | Sensibility to informational needs |

**Table 5.3 Cooperation/Collaboration**

To assess the extent of individual trustworthiness in the team, we created a trust scale consisting of 4 items (see Table 5.4).

| Item number | Description |
|---|---|
| 3. | Degree of trust |
| 6 | Information trust |
| 9. | Interaction reciprocity |
| 13. | Involvement in problem resolution |

**Table 5.4 Trust**

To assess the extent of individuals' shared information quality within the team, we created an information quality scale consisting of 8 items (see Table 5.5).

| Item number | Description |
|---|---|
| 2. | Information relevance |
| 5. | Quantity of information that contributed to problem resolution |
| 8. | Information accuracy |
| 10. | Information pertinence |
| 12. | Information suitability to the problem |
| 14. | Information consistency |
| 15. | Utility convenience of the shared information |
| 17. | Timely information sharing |

**Table 5.5 Information Quality**

Fifth, we believe the outcomes in Figure 5.3 are related to the quantity of work produced and to performance quality. Thus, we offer two hypotheses to explore differences in hierarchical and edge organizational configuration:

**Hypothesis 4: The edge mode will provide a higher level of cooperation/collaboration and information trustworthiness than the hierarchical mode.**

**Hypothesis 5: The edge mode will provide a higher level of effectiveness than the hierarchical mode.**

To measure leadership emergence, we asked participants to nominate other group members that they perceived to be leaders during the ELICT runs. Peer nomination has been a widely accepted method for measuring perceptions of leadership.[40] The participants were asked: "Think about the elements in your work team. Did anyone act as a leader? If so, and if you had to choose someone to single out as leader, please state which individual you would want to have on your team again." Mean leader nomination scores ranged from a minimum of 0 (no leader nomination) to a maximum of 1 (leader nomination). Taking into consideration the hierarchical mode or edge configuration, individuals may assess the formal leader in hierarchical mode or the emergent leader in edge using our Cooperation/Collaboration Scale, Trust Scale, and Quality Information Scale.

Our first dependent variable is the effectiveness of team performance, which we assess using ELICIT metrics. The quantity of work produced is based on team activity over time (i.e., information sharing, website posts, website information seeking, and identification attempts). The quality of work produced is based on the accuracy of the work as measured by the percentage of

correct identifications. In general, we expected to find different explanations for formal and emergent leadership in hierarchical and edge configurations, respectively.

## THE CHALLENGE

The ELICIT environment consists of a set of research platforms developed to explore issues related to Command and Control (C2), information sharing, collaboration, and trust. ELICIT requires a team of 17 subjects who perform the roles of intelligence analysts collaborating in a network-centric information processing environment in edge and hierarchical modes, with the goal of identifying a fictitious terrorist plot. The task, which can be set up as a collective responsibility, an individual responsibility, or functionally allocated to different teams, is to find the "who, what, where and when" of a terrorist attack. The players receive a number of data messages in a fixed format (called factoids) and can communicate with other players by sending factoids (share mode), or by posting factoids on a web page (post mode) where other players can read them (pull mode). Information in the form of factoids is provided periodically to each participant during an experiment session.

The factoids and their distribution are structured such that no one participant receives all the information required to perform the task. Information elements are delivered to the individuals and may be disseminated to the group by sharing information and collaborating. Thus, information sharing is required for any participant to solve the ELICIT problem. This generates different behaviours and dynamics in the information, cognitive and social domains, which are interesting to analyze with respect to a fairly large number of control variables.

We conducted two types of organizational runs: hierarchical level and edge level. In the experiment, we randomly assigned subjects to two groups–hierarchical and edge. Each group had to identify who, what, where and when an adversary will attack by combining and sharing a set of information factoids that are distributed among the subjects. Four kinds of factoids were distributed corresponding to the four kinds of information requirements (i.e., who, what, where, and when). Each factoid contained a piece of information but each alone is insufficient to solve the problem. Since subjects have only partial information, they had to collaborate and exchange information with other subjects in their group in order to complete the task. Participants could share factoids directly with each other or post factoids to websites. No one was given sufficient information to solve their assigned problem without

receiving information from others as 70% of the information provided was true and 30% was false. All interactions between subjects were conducted through a software application installed on each subject's computer. Any subject in either group could communicate with any other subject, although all communication was mediated by the software application.

The participants were 170 cadets attending their third year of a national military service academy. Individuals participated in groups of 17, forming a total of 5 teams for each mode. Participants were told that the study examines the relationship between personality and individual and collective characteristics of emergent leadership in the hierarchical and edge configurations of work.

The experiment runs used the hierarchy and edge configurations on groups with both high and low tacit knowledge and leadership ratings. The data were gathered in three phases. In phase one, before the ELICIT run, Gordon's Survey of Personal Values[41] was administered to the cadets in order to obtain a series of personal and personality data. Phase two was the ELICIT experimentation run. In phase three, the Multifactorial Leadership Questionnaire: Cooperation/Collaboration, Information Quality and Trust scale was administered after the ELICT run had concluded. All participants were given the same instructions with regard to the rules and conditions of the various tests applied.

## HIERARCHICAL LEVEL

In the hierarchical level (see Figure 5.4), each team works on its assigned portion of the problem space; that is, it only attempts to solve its part of the problem. However, players are made aware that other teams are working on other problems and need factoids. Interactions within teams are allowed, but only the team leader can forward factoids to an information broker, a non-human (software) agent, that directs relevant factoids to the assigned team leader (a dummy process). Only the team leader may send information to the coordinator, who redirects factoids to the appropriate team leader. In hierarchical organizations, decision-making is accomplished by the cross team coordinator, who submits the final threat assessment when he or she feels certain about it. The team leaders of the four different functional teams are expected to provide the cross-team coordinator with an answer to their specific question. Only the team leader is authorized to identify the solution to the problem.

In the hierarchical level, posting information is a weaker form of interaction, since it is an indirect way of communication (i.e., communicating via website), though it is the mode with the broadest range. Sharing information is a stronger form of interaction since it is a direct communication to an individual (i.e., peer-to-peer).

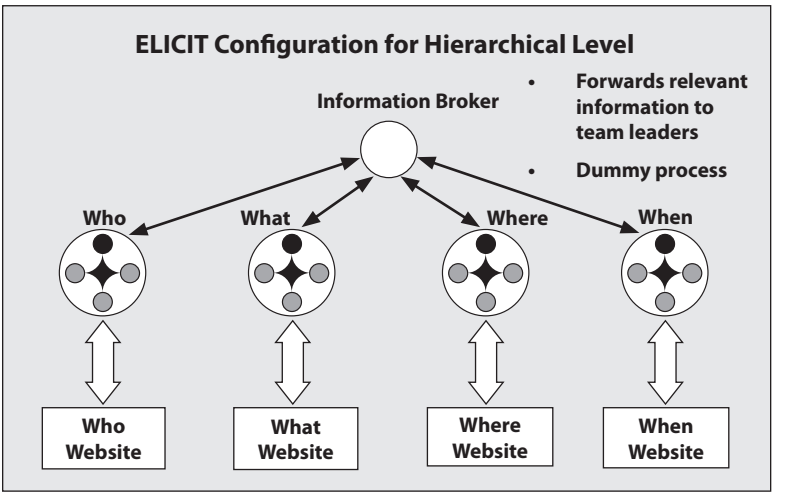


**Figure 5.4 Hierarchical Level**

## EDGE LEVEL

In the edge level (see Figure 5.5), there are no functional (specialist) groups and no team leaders. All members are analysts with the same mission and are free to choose what part of the problem they want to focus on. All members of the organization receive individual information that will be vital to assess some part of the four problem areas. With regard to communication, chat mode allows everyone to interact with everyone else. According to Alberts and Hayes,[42] each agent in edge mode is well-informed on the overall intent and has the same high level of shared awareness as the other agents, allowing them to make individual decisions.[43]

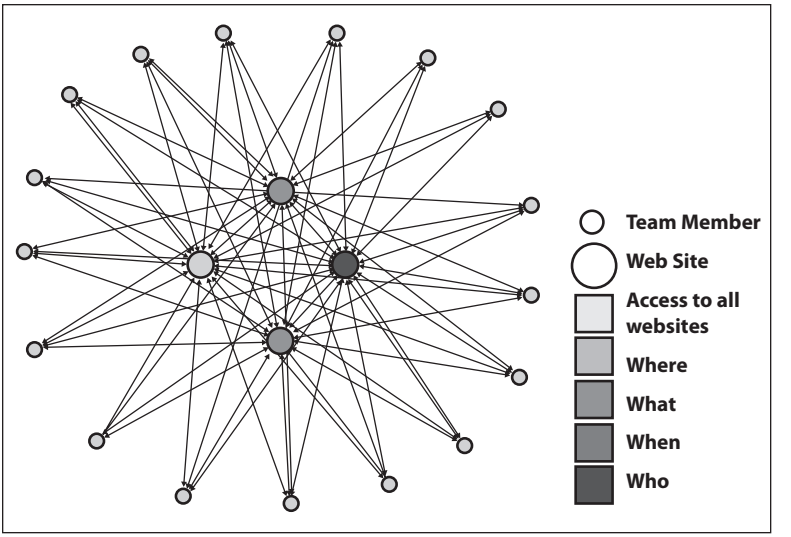


**Figure 5. 5 Edge Level**

## OUR FINDINGS

Table 5.6 presents the results of the stepwise regression analyses using the six interpersonal work values of practical mindedness, achievement, variety, decisiveness, orderliness and goal orientation as predictors for awareness of the problem, leader emergence and leader effectiveness. We found goal orientation to be a significant predictor of awareness of the problem and leader effectiveness; practical mindedness was also a significant predictor of leader emergence.

| Items | Awareness | Problem | Leader | Emergence | Leader | Effectiveness |
|---|---|---|---|---|---|---|
| | r | β | r | β | r | β |
| Practical Mindedness | .00 | -.05 | .08 | .24* | -.07 | .01 |
| Achievement | .02 | .04 | .05 | -.01 | -.20 | .19 |
| Variety | -.23 | -.13 | -.27* | -.20 | .09 | .20 |
| Decisiveness | -.08 | -.16 | .04 | .18 | .02 | .12 |
| Orderliness | .01 | -.15 | .00 | .02 | .04 | .06 |
| Goal orientation | .40** | .34** | .40 | .15 | .09 | .25* |

*p<.05; **p<.01

**Table 5.6 Regression Analysis of Interpersonal Work Values.**

In order to test Hypotheses 4 and 5 concerning the differences between the hierarchical and edge modes, we compared the means for cooperation/collaboration, trust in information and effectiveness for the two modes as found in Table 5.7 We found significant differences (p< .01) between the modes for all three variables. Given the above pattern of results, we conclude that Hypotheses 4 and 5 were clearly supported.

| | Mode | Mean | Std. Deviation | t-value |
|---|---|---|---|---|
| Cooperation/Collaboration | Hierarchical | 3,36 | ,29 | -4,0** |
| | Edge | 3,57 | ,38 | |
| Trust in Information | Hierarchical | 3,24 | ,25 | -3,78** |
| | Edge | 3,43 | ,38 | |
| Effectiveness | Hierarchical | ,27 | ,41 | -3,56** |
| | Edge | ,46 | ,28 | |

*p<.05; **p>.01

**Table 5.7 Mean Differences Between the Hierarchical and Edge Modes.**

The Cooperation/Collaboration variable is associated with interaction facilitation/participative behaviours in teams, resulting in higher levels of social influence among team members through increased engagement by becoming proactively involved in achieving the objectives.

Edge mode is an important predictor of team performance and provides a team resource that goes beyond the leadership of any single individual, resulting in greater effectiveness in comparison to the hierarchical mode.

Table 5.8 reveals no meaningful differences between functions in either mode. A high leadership score obtained by the team leader or the staff was not sufficient to increase team effectiveness. This suggests that a team leader is a facilitator of team effectiveness rather than the dominant contributor to team performance.[44] Essentially, it is the mode of work that determines the effectiveness of a team.

| Mode Effectiveness | Function | Mean | Std. Deviation | t-value |
|---|---|---|---|---|
| Hierarchical Effectiveness | Collaborator | .27 | .42 | -.12 |
| | Formal Leader | .28 | .38 | |
| Edge Effectiveness | Non Emergent leader | ,43 | ,27 | -.15 |
| | Emergent leader | ,50 | ,28 | |
| *p<.05; **p>.01 | | | | |

**Table 5.8 Mean Differences in Function in Edge and Hierarchical Mode.**

These results are consistent with Carson, Tesluk, and Marrone[45] who suggested shared leadership may also lead to greater team empowerment by heightening the sense of meaningfulness, autonomy, impact or potency of its members. As Campbell once said, "Performance is not consequence of action: it is action itself."[46]

A path analyses model was used to test Hypotheses 1 through 3 (see Figure 5.6). The results show a significant relationship between awareness of the problem and team member involvement. Consistent with Hypothesis 1, awareness of the problem was positively and indirectly related to leader emergence ($\beta$=.13, p<.01). Hypothesis 2 was not supported, as team member involvement had no significant relationship to leader emergence ($\beta$=.09, ns). A significant relationship can be verified between awareness of the problem/total post ($\beta$=-.33, p<.01) and team member involvement/total post ($\beta$=.37, p<.01).

A high awareness of the problem appears to stimulate the exchange of trustworthy information ($\beta$=.26, p<.05). There are direct and significant relationships between cooperation/collaboration, total shares, total post, total pull, trust information and leader emergence, providing support for Hypothesis 3.

## CONCLUSION

Our study sought to increase our understanding of leadership emergence in complex environments, as simulated using the ELICIT platform. We confirmed hypotheses related to individual differences that are associated with leadership emergence. The individual difference variable with the strongest relationship to leadership emergence was practical mindedness. Our results suggest that the edge mode provides a higher level of cooperation/collaboration, trust in information and effectiveness than the hierarchical mode, emphasizing "the role of collaboration in improving performance considered as network-centric or network-enabled."[47] Thus, a team leader is a facilitator of team effectiveness rather than the dominant contributor to team performance.

An important finding was the significant relationship between awareness of the problem in technological environments and team member involvement. Situational awareness proved crucial to creating a shared understanding of the situation at a given time, and is an essential condition for leader emergence and team member involvement, as reflected in a higher number of participant posts. Emerging as a leader in edge mode implies being proactive in terms of cooperation, collaboration and sharing of trustworthy information in technological environments.

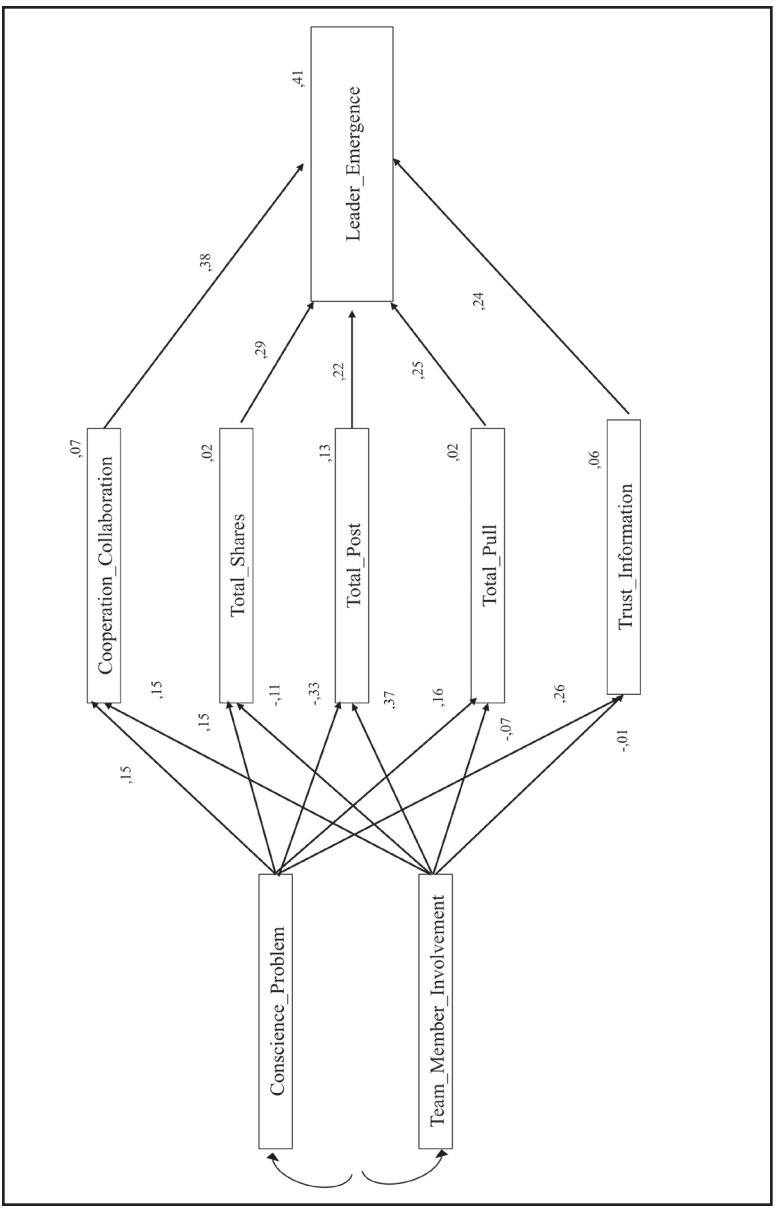


**Figure 5.6 Path Analyses Model of Leader Emergence.**

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# CHAPTER 6

# TECHNOLOGY AND THE RISE OF OPERATIONAL-STRATEGIC TEAM EFFECTIVENESS: QUESTIONS FOR LEADERSHIP RESEARCH

*Lieutenant-Colonel Wong Siok Fun, MS; and Eileen Ang, BS**

## INTRODUCTION

Technological changes have led to a more interdependent and fast-paced world.[1] Broadly defined, technology enables militaries to compress time and space. Technological innovations like the internet and social media allow information to be communicated to audiences at previously unattainable speeds while intercontinental and satellite weapons allow power to be projected accurately through previously unreachable distances.[2] Such compression of time and space dimensions can present problems or solutions for military leadership, but the exact impact remains relatively unknown.

One way of understanding this impact is through the lens of a concept closely related to leadership: team effectiveness. Leadership is inextricably linked to how a team functions. In the same way it has affected leadership, technology has also changed the time and space dimensions of teams. It now allows military forces to be distributed geographically with minimal impact on responsiveness. In turn, this has allowed the concept of team effectiveness to evolve from a tactical concept addressing how individuals work together to applications at the operational-strategic level. In essence, "cross-domain integration" is about working as a team across different services, arms and agencies, while "interoperability" is about working as a team across multinational agencies and militaries.[3] Conceptualized as such, team effectiveness no longer pertains to several individuals working together on one task over a limited period of time. Instead, it is now about several nations or organizations along with their subordinate echelons having the ability to collaborate and work with one another on a sustained

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the Singapore Ministry of Defence or the Singapore Armed Forces.

basis. Thus, technology is what enables team effectiveness to evolve into its operational-strategic form today.

This chapter will examine the impact of technology on leadership through four sections. First, the current understanding of team effectiveness in the tactical sense will be explained. Second, the current concepts of team effectiveness at the tactical level will be extrapolated to team effectiveness at the operational-strategic level. Third, possible interventions for team effectiveness at the operational-strategic level will be explored. Finally, some questions for leadership research will be raised. This chapter will examine these issues using the Singapore Armed Forces' (SAF) concepts of team and team effectiveness as a starting point.

## TEAM EFFECTIVENESS AT THE TACTICAL LEVEL: THE SAF'S CONCEPTUALISATION

The SAF has adopted the Tannenbaum *et al.* definition of a team: "a distinguishable set of two or more people who interact dynamically, interdependently, and adaptively toward a common and valued goal, who have been assigned specific roles or functions to perform, and who have a limited lifespan of membership."[4] This definition captures three essential characteristics of teams: multiple individuals, interdependent action, and a shared goal.

Teams operate in different contexts and exist for different purposes, such as decision making, problem solving, execution of decisions, or learning. The SAF has identified six types of teams. *Command Teams* are involved in planning and decision-making at different levels of an organization. *Management Teams* are staff department teams supporting planning and decision-making, and they coordinate and direct sub-units to align them to higher organizational goals. *Action Teams* are basic units that execute the decisions of their command teams. *Work Teams* execute the decisions of the management teams (e.g., branches of staff departments) and their main function is to generate products and services as directed by the management teams. *Project Teams* are typically cross-functional teams that carry out defined, specialized and time-limited tasks, and they usually disband after achieving their intended outcomes. Finally, *Peer Teams* are formed in a learning context to carry out particular tasks with no formally assigned leader.

## TEAM EFFECTIVENESS MODEL

The effectiveness of these six team types depends on different factors. However, it is possible to generalize a common set of factors that determines the effectiveness of all teams. Using the classic input-process-output framework[5] adopted by many team researchers, the SAF has developed a model to show the criteria for team effectiveness and the factors that affect the achievement of those criteria (see Figure 6.1). This model serves as an organizing heuristic that helps focus SAF leaders' efforts in improving team effectiveness.

*Input* describes antecedent factors that enable or constrain members' interactions.[7] They include individual-level, team-level and organizational-level factors. Individual-level inputs consist of the attributes and characteristics required of a person to perform a particular job, such as his/her personality, values and beliefs. Team-level inputs include the team size[8] and team tasks[9] while organizational-level inputs include aspects such as the organizational culture.

*Process* describes members' interactions directed towards task attainment. They relate to how members combine individual resources, knowledge and skills to achieve their tasks.[10] Two broad categories of factors underpin team processes. The first category, team dynamics, refers to social influences within the team and it forms the foundation for team cognition development. The second category, team cognition, refers to the team's collective thinking process and the way it makes decisions.[11]

*Output* describes the end-products of team activities. A common view of an effective team is one that manages to complete its tasks or attain its goals,[12] but this is an overly narrow definition that neglects areas related to teamwork. Instead, team effectiveness has to be multifaceted, and a team is deemed effective only if it achieves three interrelated criteria.[13] First, the team's output must meet the expectations of its stakeholders or senior leaders. Second, there must be positive consequences on team members' attitudes and feelings towards the team. Third, the team members' ability to work well together in the future must be enhanced. Therefore, a team will not be considered effective if it achieves its goals at the expense of team members' relationships.

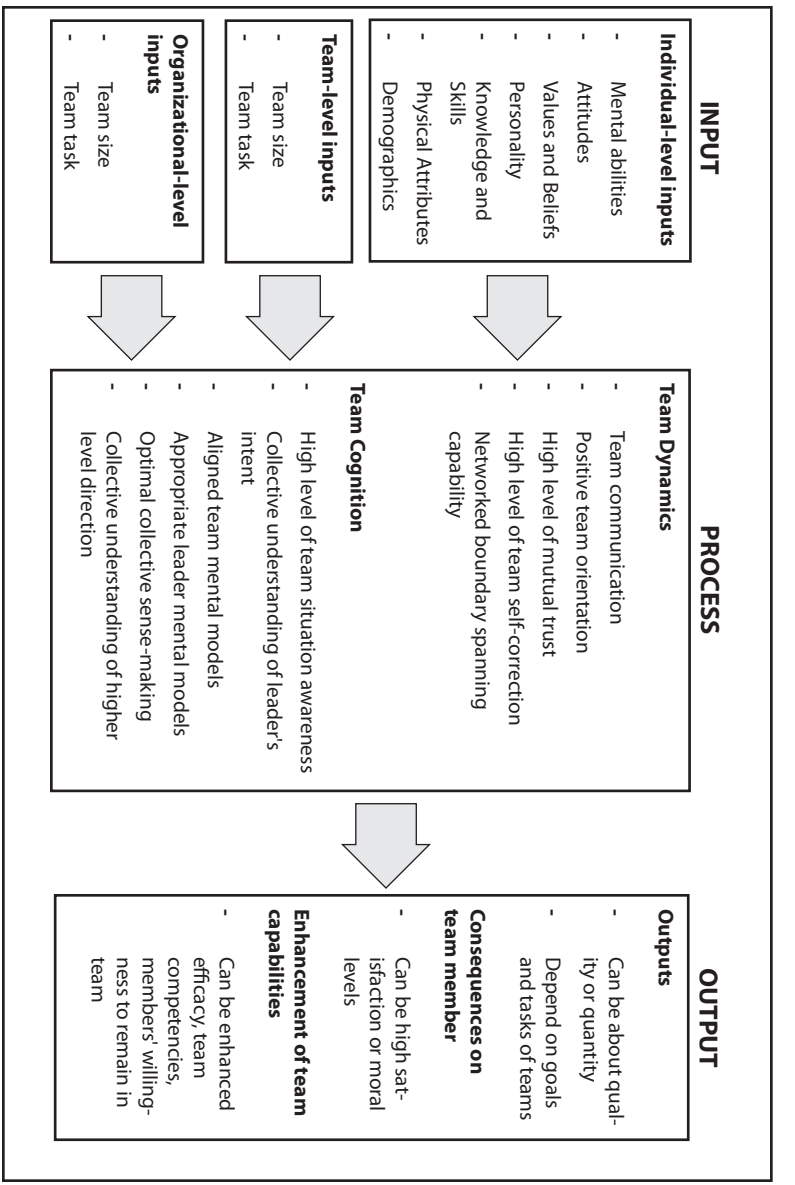


**Figure 6.1 The SAF's Team Effectiveness Model[6]**

# TEAM EFFECTIVENESS AT THE OPERATIONAL-STRATEGIC LEVEL

Security threats in the 21st century are transnational, multidimensional and unpredictable.[14] In turn, militaries have formed partnerships and teams, pooling resources across different nations and organizations, and establishing linkages at the policy, operational and tactical levels.[15] However, while formal ties are in place, the softer aspects of interpersonal understanding and trust have not been systematically pursued. To optimize the joint capabilities of different entities, these softer aspects have to be attained. In the same way that gathering a bunch of individuals may not lead to an effective team, the mere formation of partnerships across nations and organizations may not yield effective outcomes. This is where team effectiveness at the operational-strategic level becomes crucial.

In the current absence of a framework, the SAF's conceptualization of teams and team effectiveness provides a starting point. If a team in the tactical sense is defined as a "distinguishable set of two or more *people,*" a team in the operational-strategic sense then refers to a "distinguishable set of two or more *groups*." Such groups would be made up of a collection of people such as nations, militaries, services, organizations or teams, with each providing its unique inputs.

Even though they may not be identical, the factors that affect tactical team effectiveness can be adapted for a preliminary understanding of operational-strategic team effectiveness. Using the SAF's team effectiveness model, *Output* will continue to refer to the end-products. The three criteria for effectiveness remain valid; the team's output must meet the expectations of its stakeholders or senior leaders, there must be positive consequences on different groups' attitudes and feelings towards the team, and the individual entities' ability to work well together in the future must be enhanced.

*Input*-wise, individual-level inputs will be formed by aggregating each entity's attributes in areas such as mental ability, attitude and personality. Differences in cultural backgrounds may lead to different beliefs and language barriers between entities' members.[16] Team-level inputs will now refer to the number of entities involved. Organizational-level inputs will refer to the environment under which the team was established, such as whether there is a climate of open sharing, and the extent to which the interests of different stakeholders coincide.

*Process*-wise, team dynamics will now reflect the social influences upon the different entities in the team, and team cognition will pertain to the way the team thinks and makes decisions. Crucially, it is in this area that the team effectiveness model, while offering initial clues, cannot provide complete answers. Operational-strategic team effectiveness is possible due to technology compressing time and space. Different entities are now dispersed across locations, relying primarily on technology to complete their tasks.[17] Hence, the question is: how do the increased distances and speeds affect the factors that drive operational-strategic teamwork? For example, given that emails, videoconferencing and instant messaging are the key modes of communication, how will the lack of physical interaction affect the building of rapport and trust? How will the absence of visual cues and social presence in face-to-face dialogues, which enable people to more easily learn one another's backgrounds, experiences and areas of expertise, affect the interpersonal relationships?[18] Do the ease and speed of virtual communication have any implications for what, when and how to communicate? Will there be greater difficulties in facilitating different entities' situation awareness and aligning their mental models? The answers to these issues will aid the understanding of team effectiveness at the operational-strategic level.

## INTERVENTIONS FOR OPERATIONAL-STRATEGIC TEAM EFFECTIVENESS

The SAF has developed a slew of practices and processes to help its leaders enhance their teams' effectiveness. The next section will elaborate three such efforts and attempt to apply them to teams operating at the operational-strategic level where possible.

### *TEAM BUILDING AND TEAM LEARNING*

Team building and team learning (TBTL) is an SAF leadership development practice that helps leaders foster the conditions necessary for groups to become effective teams. It builds the team's cohesion and commitment, and aligns individual members' insights to improve team effectiveness. Team building focuses on improving teamwork.[19] It involves the team members coming to an agreement to work together towards shared, desired outcomes. This requires them to examine how they currently work together, explore strengths and weaknesses, agree on their preferred way of collaborating, and establish action plans for implementing more effective ways of working together. In the SAF, the shared Vision, Roles, Rules and Relationships (V3R)[20]

model is commonly used to facilitate such discussions. Team building establishes the foundation for the team to be developed further. Team learning focuses on improving the alignment of individual insights to become shared knowledge.[21] It involves the team members reflecting on their experiences, sharing insights or knowledge, and creating shared mental models for enhanced team responsiveness and adaptability.

The TBTL practice can similarly be used to build operational-strategic teams. Indeed, certain aspects of TBTL may be even more important to operational-strategic teams. For instance, using the V3R model, building relationships and developing trust will be of paramount importance and should be an initial focus. Agreeing on rules or establishing clear norms will also be important, such as agreeing on regular meeting times, setting ground rules for frequency and quality of virtual communication.[22] Moreover, given its composition of different entities, the team should also be clear about its shared vision or mission. To facilitate the team's learning, it would also be useful to establish a knowledge database capturing key insights across entities.[23]

## *COMMAND EFFECTIVENESS PROCESS*

Command Effectiveness Process (CEP) is a process for command effectiveness via systematizing and accelerating new command teams' development and enhancing their effectiveness. CEP focuses on the individual commander and his/her command team's development. There are four CEP phases, each with a different focus. Phase One involves individual preparation by the commander on his/her command philosophy, command action plan and individual development action plan. Phase Two involves peer learning and allows commanders to sharpen their command philosophies and command action plans through discussion with their peers. Phase Three involves the command team coming together to discuss and create their V3R, agree on key deliverables and formulate strategies to achieve the desired outcomes. Phase Four involves the command team coming together at a later stage to review their progress, strategies and discuss the way ahead.

The CEP can also be used for operational-strategic teams. The team leader may consider adopting a similar process when the team is first formed. The team leader may start off by preparing his/her leadership philosophy in terms of how he/she wishes to lead the team. This can then be promulgated to the team members during the first encounters. He/she can also drive discussions about the team's V3R, allocation of tasks and work strategies, which can be reviewed at another virtual session a few months later.

### *TEAM EVALUATION*

Team evaluation pertains to a team assessing its own development and effectiveness and engaging in self-correction. A team can evaluate its current state for improvement or it can evaluate the outcomes at the conclusion of a task[24]. In the SAF, an in-house team diagnostic instrument is used to assess the team's processes. Team evaluation is also supported by the SAF Action Learning Process (ALP). ALP is a leadership development process to enable leaders to accelerate learning in their teams. Before an activity, team members will review their past lessons learned through the relevant repositories or their unit's knowledge management system to avoid similar mistakes and to reinforce positive lessons learned. During an activity, the team will evaluate its performance, reflect on recently concluded actions and highlight any learning points. The team leader can then better understand the reasons behind the differences in the intended and actual outcomes and how to overcome them and enhance the team's subsequent performance. After the completion of the activity, the team will consolidate the lessons learned and translate them into heuristics for future reference and enhanced team effectiveness.

When applied in the context of operational-strategic teams, the team leader may choose to evaluate his/her team's development and teamwork periodically. This can be achieved through regular feedback sessions where consolidated feedback from the various entities are solicited, and recently concluded key actions are reviewed in dedicated sessions and documented as lessons learned.

## QUESTIONS FOR LEADERSHIP RESEARCH

Technology has led to the proliferation of operational-strategic teams. While the rest of this book assesses how technology affects leadership, this chapter suggests two main research questions resulting from the expanded conceptualization of team effectiveness.

First, how does leadership of teams change now that leadership is required over many groups? This is similar to the idea of "team of teams."[25] Do the skills used in leading a tactical team apply to leading operational-strategic teams? To what extent can we use the leading of tactical teams as a basis for understand the leading of operational-strategic teams? How does the increased speed and distance change the nature of leadership? What are the differences between virtual military leadership and military leadership in a traditional face-to-face setting?

Second, now that a team leader belongs to a bigger ecosystem of teams, what will be the impact of their leadership? How do leaders ensure team effectiveness, not just within their team, but among the rest of the teams? Will leaders be more constrained? How do they manage competing interests? How would these affect leadership development efforts in the military?

## CONCLUSION

One of the foremost tasks of a leader is to ensure the whole is greater than the sum of the parts. While technology has allowed military operations to be prosecuted at greater speeds and distances than ever before, it will continue to be sub-optimized until softer aspects related to team effectiveness are properly understood. For true integration and interoperability, research needs to progress beyond tactical-level team effectiveness to the operational-strategic level. There is a need to better understand operational-strategic team effectiveness, how to achieve it, and the role of a leader in enabling it. Only with this knowledge can militaries truly exploit technology to deal with the transnational, multinational and unpredictable threats in today's world.

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# CHAPTER 7

# THE EVOLUTIONARY NATURE OF INNOVATION AND DISRUPTIVE CHANGE: THE INTERRELATEDNESS OF TECHNOLOGY, LEADERSHIP AND ORGANIZATIONS

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## INTRODUCTION

> *"No degree of technological development of scientific calculation will overcome the human dimension in war"*[1]

Technology is a buzzword, central to innovation, in particular in relation to disruptive innovation. However, there are several aspects of technology and disruptive innovation that deserve clarification. From critiques of Christensen[2] to writings about Silicon Valley unicorns, several contributors have noticed pitfalls in the disruption literature, including some misconceptions about the role of leaders and leadership. For example, it has been noticed that there is too much focus on success; on technology and on individual disruptors and their personality, and not enough on other important factors such as management of the research and development processes, and the curiosity underlying innovations; forgotten failures; the organizational capabilities and capacity to change; and the role of organizational capabilities and routines in facilitating this process. Christensen has responded[3] to some of these criticisms and sought to bring the disruption literature back to its roots and to clarify disruption theory. In this chapter, we aim to contribute to "bringing back in" the organizational and management dimension to the discussions of technological innovations and disruptive change, focusing on examples from military organizations.

Disruptive innovation research developed mostly in the context of business organizations (although, for decades before, military revolutions and disruptions have been studied), where new firms captured market share and outcompeted incumbent firms by targeting niche market segments with lower

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the United States Navy or Department of Defense.

cost products or services.[4] In both business and military contexts, the implementation of disruption and capturing its value involves much more than the technology or the disruptive innovation itself. The focus of this chapter is thus the organizational and management aspects of disruptive processes, along with the role of capabilities, routines, and strategic leadership implementing disruptive innovation. Although aspects of the technology are important, the human dimension of leaders and managers also play key roles in identifying the technologies and in translating them into new strategic opportunities.

In addition, organizational structures, routines and capabilities are needed to support both the emergence and implementation of innovative technologies. This is not just about aligning incentives but is in large part about building a culture of organizational identification, loyalty and trust, which supports the nurturing of experimentation with new ideas and their implementation. A key to the successful strategic management of disruptive innovation lies in recognizing the embeddedness and interrelations of the long-term drivers of change.

Innovations and sustainable changes in organizations often take decades to evolve. While it is easy to focus on technologies or individual leaders, the management of the innovation in ways useful to capture value from them relies on understanding the embeddedness of change in people, organization, technology, routines and capabilities.

We also discuss aspects of a case of an organizational disruption, innovation, organizational implementation, and how leaders managed it by examining the emergence and transformation of the United States Marine Corps around "manoeuver warfare," which emerged as the central philosophy and doctrine for the Marine Corps in the 1980s and 1990s and guided a comprehensive transformation of the organization.[5] Although there were intellectual and even institutional roots of this transformation earlier, only in the 1980s and 1990s did it become embedded in how the organization thought and fought. In other words, successful implementation depended crucially on leadership and the strategic and organizational management of the capabilities and processes underlying the innovations (including the resistances to changing and adoption), not just the technologies or the disruptions themselves. This case also illustrates the often long and evolutionary nature leading to disruptions and their implementation. We believe that understanding this and other innovations in military organizations may be useful to improving our understanding of the management of disruptive changes in organizations in general.

In this the remainder of this chapter, we will discuss aspects of disruption and innovation, elaborate on an example, then conclude with some lessons and possible steps towards a more integrative and evolutionary framework for understanding the organizational and managerial process underlying the (strategic) management and leadership of disruptive changes (including innovation).

## THE IMPORTANCE OF STRATEGIC MANAGEMENT OF DISRUPTIVE INNOVATIONS

### *DISRUPTIVE INNOVATION*

Disruptive innovation is a concept in the management literature made popular by Clayton Christensen in a series of studies in the late 1990s.[6] Disruptive innovation occurs when a small firm (relative to incumbents) introduces a product or service to a niche market overlooked by incumbents. As disruptors gain a share of niche categories, they then move into the mainstream market segment and succeed because incumbents have not responded. Disruptors typically introduce new products or services at lower cost to customers.

Much has been written about disruption innovation and technology in the management literature. Often, this literature has focused on success driven by individual entrepreneurs. An additional area of focus concerns technological change driven by one particular firm. The emphasis is thus less on the management or the implementation of the disruption.

Disruption does not always mean success. A disruption innovation is simply one where the disrupting firm captures a share of an underserved market and then starts capturing segments of the mainstream market after competitors do not respond. Therefore, the innovation disrupts the original structure of the market or industry. This does not suggest that the focal disrupting firm always maintains a hold on the technology or that competitors will not respond in the future. Kodak was one of the originators of digital photography technology but failed to respond to its own disruptive innovation. Kodak's failure to capitalize on this technology and prevent competitors from utilizing it led to losing market share as digital camera technology matured.[7]

The Kodak example illustrates how it may be worthwhile to focus less on the technology and inventors *per se,* and more on how the process of disruption is inherently organizational in nature. Disruption, like most strategic changes, takes place in organizations and involves a complex mix of

individuals, ideas, organizations, routines, inertias, technologies and capabilities. The same is true for military organizations. By thinking about a behavioural- or capabilities-based lens of disruptive innovation, we may help understand when disruptive technologies will affect military organizations and when they will not.

Of course, military organizations compete on a significantly different level from business or non-profit organizations. Rather than trying to capture market share, military organizations seek to advance their nation's strategic goals and to prevent the enemy from accomplishing its goals. Technological advances in militaries also occur differently from private sector organizations. For example, many military technologies are expressly developed through government research and development laboratories for use only by the military. Procurement of such technology is subject to control from stakeholders both within and outside the organization; the military itself may propose a technology be adopted, but the ultimate adoption of the technology is contingent on government authorities funding the request.

## *DISRUPTION IN MILITARY ORGANIZATIONS*

Despite a reputation for their resistance to change, military organizations have undergone some of the most disruptive transformations. Therefore, they may be useful illustrations of some of the management aspects of disruptive processes. Unlike startups, the stakes for failure are very high. If a disruptive innovation fails, the wrong people often die. Thus, military organizations must identify mechanisms for allowing disruption without compromising the organization's core competencies and to allow mission fulfillment. They must use innovations to create strategic asymmetries that can be used to achieve strategic and operational advantages. They must find ways to constructively manage disruptive processes and the implementation of changes in the organization.

Notable examples of military-related innovations, with different degrees of disruptiveness, include:

- Cavalry warfare
- Emergence of critical resources and capabilities (e.g., gunpowder)
- Weapons and systems upgrades
- Digital naval steering systems
- Carrier warfare
- Tanks and armoured warfare

- Continuing aim gunfire
- Submarines
- Aircraft carriers
- Amphibious capabilities
- Strategic bombing
- Manoeuver warfare
- Precision guided munitions

These, and other, innovations are often built on civilian developments. They have had and continue to have tremendous influence on the way military organizations perform, and their evolution has been shaped not only by the implicit or explicit underlying technologies, but also by the extent to which the organizational structures and capabilities were managed to adopt them. Such innovations are almost always the products of the novel interaction of one or more evolutionary changes in the underlying configuration of resources, technologies, organizations and capabilities. The management of these configurations is critical to the successful adoption and implementation of disruptive innovations.

Moreover, such innovations have also often been influenced by events in the larger strategic environment, as well as by the interactions between organizational factors and dominant ways of thinking. For example, despite the British combined use of tanks and infantry to break German lines in 1918 (i.e., an early armoured capability paradigm), most of the thinking around victories at the time was firmly embedded in infantry use of artillery warfare. Despite the advances in technology, the organization was still in its old paradigm.[8] Another example is the use of helicopters in combat-combining technologies in new ways, this was pioneered by the United States Army. But, due to several organizational, political and managerial factors, such as the lack of careers in the Army's organization for helicopter pilots, the United States Marine Corps were the first to be able to adopt its organization and capabilities to fully utilize the recombinant innovation of vertical lift.

Innovation, thus, involves a mix of strategic, political and organizational factors. Individuals and ideas are particularly important in the early periods of major shifts when new ideas are vulnerable to the many kinds of resistance to newness and to change.

## *CONCEPTUALIZING DISRUPTIVE CHANGES*

The concept of a disruptive innovation is similar in some ways to the concept of a Revolution in Military Affairs (RMA), a concept well established in defense thinking. An RMA occurs when new technologies and new operational concepts combine to fundamentally alter the conduct of military operations.[9] However, the RMA is characterized not by a single technology, but by a bundle of technologies. The RMA study suggests that the combination of machine gun, airplane, submarine, and battleship dramatically altered warfare toward the end of the 19th century; the change was not due to one of these technologies alone, but all of them in concert with new operational concepts. Central to the RMA concept was not just the technology, but changes in thinking.[10]

There are different degrees of disruptiveness in innovation and change management processes. Typologies of innovation often focus on technology. However, the process is more complex and technological categories often overlap. One way of looking at innovations is in terms of broader categories organized on organizational effects. A useful framework was introduced by Henderson and Clark[11] and focused on existing core concepts, as well as the linkages between those and the organizational components (see Figure 7.1).

| | **Core Concepts / Ways of Thinking: Reinforced** | **Core Concepts: Changed / Overturned** |
|---|---|---|
| **Linkages Between Concepts and Organizational Components: Unchanged** | **Incremental Innovation** | **Modular Innovation** |
| **Linkages Between Concept and Organizational Components: Changed** | **Architectural Innovation** | **Radical Innovation** |

**Figure 7.1 Henderson and Clark's Framework for Understanding Innovation**

In military organizations, examples of incremental innovations can include weapons upgrades; such "innovations in the little" over time can in fact have very powerful effects. A weapons upgrade can affect many personnel across the organization but reflect a relatively small investment on the part of the organization. For example, the change from a muzzle-loading rifle to a bolt-action rifle had significant implications for the conduct of warfare. Soldiers were no longer forced to spend long periods of time reloading in between shots; they could rifle many shots in succession. This represented an

incremental development of the core technology of the rifle, but represented a large innovative shift.

Architectural innovations or disruptions include the emergence of the advance base concept, Marine Air-Ground Task Force warfare, and carrier aviation. Disruptive innovations are rare and often not seen as disruptive at first, otherwise organizational forces would have suppressed them. The manoeuver warfare movement was, on the organizational level, a radical change in how the organization thought, but it included and institutionalized also incremental, modular and architectural innovations. We will soon elaborate on manoeuver warfare in a case study.

For each innovation, the disruptive element of the innovation, incremental or radical, must be managed. Therefore, the real keys are the human and organizational capabilities, and the ability of the leaders in place to appreciate experiments. This involves being questioned, not taking credit, and genuinely putting the organization's long-term survival above personal goals. The United States Marine Corps refers to this as "we" leadership and this can be built into capabilities.[12]

In the case study below, one can also see the influence of many different factors and their interaction over the evolution and "unfolding" of the process of disruption and its implementation.

## LEADERSHIP OF DISRUPTION AND INNOVATIONS IN MILITARY ORGANIZATIONS: THE CASE OF MANOEUVER WARFARE

> "There is nothing more difficult to carry out, nor more doubtful of success, nor more difficult to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would by a new order...[due to] the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it"
>
> – Machiavelli, "The Prince"[13]

Resistance to change, as illustrated in Henry Ford's famous saying that if he had asked people what they wanted when he was developing the automobile they would have said "faster horses," permeates both business and military organizations. Making sure change is adopted by the organization and incorporated into its routines and "ways of thinking" is often at least as (if not much more) complex than thinking up the innovation or disruption itself.

## *THE MARINE CORPS*

The Marine Corps has a rich history of competing in different environments (including peacetime) since its birth in 1775.[14] The issue of "What makes a Marine a Marine" has been the source of puzzlement for decades. Marines exhibit a strong sense of organizational identification and unity–despite a seemingly strong hierarchy–as manifested in General Alfred Gray's statement, "Every Marine is, first and foremost, a rifleman."[15] Indeed, a lesson from Gray is to always put your organization and your people ahead of yourself, which represents a contrast to much of management theory's emphasis on self-interested behaviour. But it is also an essential element in understanding how and why the organization seems better able to change than one might perhaps expect.

The uniqueness of the Marine Corps from an organizational and capabilities perspective also includes the fact that the Marine Corps is, effectively, ambidextrous by nature, as it mixes and integrates the "core competencies" of other services. While the US Army is known for land combat, the US Air Force for its flying, the US Navy for its sea capabilities, the Marine Corps has a comprehensive land-sea-air component, so it has a built-in need for flexible capabilities, as well as for a mindset that is both able to learn from the past as well as try to shape the future.

The simultaneous embrace and pursuit of exploration and exploitation in the Marine Corps is made possible in part by its leadership style. Far from micro-management, a key to how Marines operate is the shared understanding of the commander's intent. We argue this is made possible at least in part by organizational loyalty and identification facilitated by management processes. When in combat, the ability to adapt and to be innovative at the front line comes from the ability of junior leaders to make rapid decisions based on their understanding of their leader's intent. The shared understanding of the organization's goals minimizes interest biases through training and the building of loyalty. It is also made possible through organizational communication; not formal communication channels but largely informal and implicit ones. These are analogous to shared mental and cognitive models.

> "We believe that implicit communication – to communicate through mutual understanding, using a minimum of key, well-understood phrases or even anticipating each other's thoughts – is a faster, more effective way to communicate than using detailed, explicit instructions. We develop this ability through familiarity and trust, which are based on a shared philosophy and shared experience."[16]

Like all military organizations, the Marine Corps has had to adapt to the changing strategic environment over the last two centuries. One of the most recent comprehensive transformations of the Marine Corps into a more adaptive organization occurred in the late 1980s and 1990s, and was led by Marine Corps General Alfred Gray. Gray knew that to improve the Marine Corps, one had to change how the organization thought in the long run, not just its equipment and technologies in the short run. The transformation needed to be intellectual as well as organizational, and it needed to start with a hard-diagnostic look at *how* to think, not *what* to think.

Gray and his colleagues outlined a framework for *Warfighting*, which evolved as a symbol of adaptive and strategic thinking. This key text which is read by Marines at all levels was first described as a "doctrine" but it was much more than this; it is a philosophy and a strategic way of thinking instilled in all Marines regardless of rank and age, and is to be applied in peacetime as well as in wartime. In Gray's words, it is a "philosophy for action that, in war, in crisis and in peace, dictates the Marine Corps approach to duty."[17] The overall warfighting framework also became a foundation for the Marine Corps central initiatives such as manoeuver warfare and decentralized leadership.[18] Central ingredients in the philosophy were the importance of understanding competitor weaknesses (e.g., a strategic asymmetry) and the use of speed and agility and decentralized decision making. In effect, manoeuver warfare emerged almost as a behavioural and evolutionary alternative to previous static approaches.

How did such an organizational transformation take place, and what was the role of leadership and organizational factors in the management of the "disruptive" process? Any institutional and organizational change involves people, ideas, and bureaucracies. Perhaps the reason the Marines could transform is because they had always recognized the importance of people first: "For the Marine Corps the first priority has always been its people, not its functions or its technology."[19]

## *AL GRAY*

Al Gray was the son of a New Jersey railroad engineer. In 1950, he enlisted in the Marine Corps as a private, winning a commission as an officer two years later. He held a Bachelor of Science degree from the State University of New York but was largely self-educated. Gray initially served as an artillery officer, later moving into communications. He served two years in the Korean War and five years in Vietnam. During the fall of Saigon, Gray commanded the well-executed operation to evacuate Americans and Vietnamese from the

city. The rest of his resume was heavy with assignments in Camp Lejeune, Okinawa, and Quantico, rather than at the Pentagon. By the time he was nominated by President Reagan to be the 29th Commandant of the Marine Corps, he had more field time than almost any general officer of any service.

As a leader, Gray cared about ideas, not rank or prestige; senior officers took off their ranks during de-briefings and exercises. He did not want any pomp when he visited troops, and he did not sit at head tables at dinner, but with the young lieutenants (i.e., living the "officers eat last" philosophy). He downplayed his own contributions, saying that one can get more done if one does not try to take credit for it. He emphasized upgrading the soul of the Corps, not cosmetics:

> "He wanted officers who worried more about clever tactics than prestige staff assignments, who had no interest beyond finding better ways to smite the nation's enemies…He wanted Marines to fight better by fighting smarter, by exploiting intelligence and targeting technology, not relying on massive firepower... He wanted the Corps to turn inward in a crusade of self-improvement, and to let the image problems take care of themselves."[20]

Gray led the Marine Corps in a time of decreasing budgets, but strongly believed in upgrading educational capabilities and the quality of Marines. Prior to Gray, commandants felt the Marine Corps had lost its elitism and needed to get it back. Commandant Wilson made personnel reform a priority.

> "By 1989 [the Marine Corps] had reversed a recruiting pattern that had jeopardized its claims to elitism. In 1975, the Marine Corps had become a dumping ground for the refuse of military recruiting; fifteen years later it celebrated the quality of the men and women it admitted and allowed to continue its service. The Marine Corps improved its personnel in the face of adverse demographics and its own unique requirements. Its success in finding a "few good men," which are neither few nor all men, laid the basis for its ability to modernize and reorganize for global contingency missions that required unusual sophistication in military skills and motivation."[21]

Demographically, Gray sought to increase the proportion of high school graduates to over 75% and to shrink the proportion of enlistees in the lowest cognitive ability group. Moreover, he allowed "problem Marines" to separate. Over a few years, these changes led to improvements in basic training and quality of life in the barracks.

Gray was known for caring for his men and sticking his head out for them. After the 1983 suicide bombing of the Marine Corps headquarters building in Beirut, Lebanon, which killed 241 Americans, Gray was one of a few general officers to offer his resignation. One officer remarked that he offered to resign because, "Somehow there must be accountability, there must be responsibility."[22] It was an offer that his superior refused.

Gray's years in cryptology were the place where he saw some significant successes in reorganizing activities to increase effectiveness. Dating back to World War II (WWII), there were two schools of thought about how signals intelligence (SIGINT) information should be used. Most Navy officers and Marine cryptologists of the day thought SIGINT should be separated from other intel sources in order not to contaminate it. Gray subscribed to the opposite view that all-source intelligence was the right approach. In 1967, he proved the approach by undertaking an intense, retrospective analysis to align intercepted Vietnamese enemy communications with enemy operations. "It was extremely tedious, detailed, time-consuming work, but sure enough…the integration of SIGINT and general intelligence resulted in cracking the code."[23] Thus, Gray was awarded the annual Travis Trophy by the National Security Agency (NSA), which goes to a subordinate command that most contributed to the NSA mission during the year. Though the work involved many, Gray was selected to personally receive the award because he had spearheaded the professionalization of the Marine Corps' SIGINT capability through many trying years, from behind the scenes.

## *THE DEVELOPMENT OF WARFIGHTING*

Gray was successful in implementing manoeuver warfare in part due to building a team of smart people. He focused not on finding those who agreed with him, but those who could help the program evolve and develop in ways useful to the organization. One such collaborator, General Paul van Riper said,

> "Despite my protest–as far as a serving officer can protest orders–General Gray denied an extension of my tour in Okinawa, and in the summer of 1988, directed me to report as Director of the Marine Corps Command and Staff College at Quantico, Virginia. In the midst of his Corps-wide effort to enhance professional military education, he made clear his purpose from my first day of duty. He said simply, 'This school needs changing. My intent is for it to become the premier institution of its kind in the world. You cannot achieve that goal in the time I expect you to be here but you will have time to lay a foundation that allows it to happen.' I received no more guidance, except a pointed edict to base all instruction on history and the concepts of manoeuver

> warfare. General Gray wanted to separate classes on military history–he insisted on weaving history into all the instructions on operations and tactics. The same admonition followed for 'maneuverist thinking,' with a strong suggestion that I ensure the infusion of Clausewitz and Sun Tzu into the course. Basically, he wanted the entire course to rest on military history and established ideas on strategy."[24]

*Warfighting* was born out of a desire to support professional education in the Marine Corps. According to Van Riper, "General Gray tasked the doctrine writers at Quantico to prepare a new 'capstone' manual that captured the essentials of warfare. Although many of my contemporaries–experienced colonels–hoped for assignment to the project, a young captain, John Smith, received the mission."[25]

The codification of a new way of doing things resulted in the *Warfighting* manual in 1989. The second edition states that the manual "has changed the way Marines think about warfare."[26] As was Al Gray's style, *Warfighting* is not officially a publication by an individual. Although there is no official "authorship" of *Warfighting*, Gray described in the foreword his key intentions for the document: "This book describes my philosophy on warfighting…You will notice that the book does not contain specific techniques and procedures for conduct. Rather, it provides broad guidance in the form of concepts and values. It requires judgment in application."

*Warfighting* represented a change in how the Marine Corps conducted warfare. It was not a physical technology, but still a technological advance in how Marines performed operations. How did Gray implement *Warfighting* and what lessons can we draw from his experience? Leading and implementing manoeuver warfare as a way of thinking did not happen overnight. There were several elements Gray used to facilitate implementation: experimentation and failure, debating concepts and ideas, reading and education, and boot camp and training.

## EXPERIMENTATION AND FAILURES

Experimentation and learning from failure are classic ways that organizations learn new capabilities. In the Marine Corps context, Gray promoted several types of experimentation. He started efforts during the post-Vietnam turnaround of the Marine Corps, which had emerged from the conflict with several fundamental problems.

First, Gray was comfortable with failure and recognized the need to make missteps to fine-tune the new operational paradigm. Initially, Gray sought

to learn from exercises and promoted debriefing as a means of learning. In terms of training, Gray established combined arms operations exercises at Fort Pickett. The first took place in the Fall of 1981 and involved field training plus a three-day war simulation involving the 6th Marine Amphibious Brigade which was also conducting a command post exercise. Gray led a control group with umpires and other observers from the manoeuver warfare board to report findings, and the editor of the *Marine Corps Gazette* was present to disseminate findings to the wider community. These early exercises demonstrated the validity of the manoeuver warfare concept at the practical level, and the concepts discussed in publications were important for promoting manoeuver warfare doctrine throughout the organization. Critical to the success of the experimentation was that these were not scripted scenarios where units were expected to play their part; by making the exercises free play, Gray could more accurately simulate combat scenarios and test the validity of the doctrine.

Gray emphasized learning from what happened. The exercises were not perfect, but emphasized learning from the processes rather than getting everything right, and how junior officers could correct senior officers and needed to learn to trust their instincts and to speak up without fear. By breaking down hierarchy and emphasizing learning and ideas, Gray reinforced manoeuver warfare and improved adaptive thinking among junior officers.

## *WORDS MATTER: DEBATING CONCEPTS AND IDEAS*

Years, even decades, before the publication of *Warfighting*, debates about "attrition" and "manoeuver" were present in the Marine Corps. It was manifested, for instance, in articles in the *Marine Corps Gazette*, involving discussions by like-minded colleagues who also shared an interest in building on John Boyd's ideas to insert manoeuver warfare into the culture and the practice of the organization's DNA. Publishing these ideas in the Marine Corp's professional journal was important to distribute the ideas and debates of the movement into the hearts and minds of young Marines. Gray drew from and promoted these writings as he promoted manoeuver warfare.

Several key articles during the 1970s and 1980s showcase the debates. In 1979, Miller analyzed Soviet doctrine and argued that Marines could use concepts of manoeuver, exemplified through commanders like Alexander the Great, to win against superior odds.[27] This article also described earlier intellectual foundations for manoeuver. William Lind's article "Defining Manoeuver Warfare" emphasized manoeuver as an evolutionary mindset (as opposed to "neoclassical" attritionism):

> "Firepower-attrition is warfare on the model of Verdun in World War I, a mutual casualty inflicting and absorbing contest where the goal is a favorable exchange rate. The conflict is more physical than mental. Efforts focus on the tactical level with goals set in terms of terrain. Defenses tend to be linear ('forward defense'), attacks frontal, battles set-piece and movement preplanned and slow. In contrast, manoeuver warfare is warfare on the model of Genghis Khans, the German blitzkrieg and almost all Israeli campaigns. The goal is destruction of the enemy's vital cohesion–disruption–not piece-by-piece physical destruction. The objective is the enemy's mind not his body. The principal tool is moving forces into unexpected places at surprisingly high speeds. Firepower is a servant of manoeuver, used to create openings in enemy defenses and, when necessary, to annihilate the remnants of his forces after the cohesion has been shattered."[28]

This reflects not just a different way of fighting, but a different way of *thinking* about fighting.

In 1981, another piece by Wilson, Wyly, Lind, and Trainor focused on clarifying the intellectual roots of manoeuver warfare, but also identified some possible barriers to its implementation.[29] In particular, the Marine Corp's bureaucratic inertia was identified as a key challenge, and the authors called for more initiative on the battlefield. The authors found manoeuver warfare to be one of the Marine Corps' only hopes when faced with small numbers and changes in the global landscape. They called for a publication on manoeuver warfare–a manual.[30]

Some contributions also sought to build on ideas from both camps and sought a common foundation and clarification of misunderstandings.[31] These contributions used examples and lessons from experience to clarify ideas and urge further study of history. They emphasized that manoeuver warfare was not just about fighting, but also about a way of thinking that is adaptive to environmental change.

In June 1984, Lind wrote about how to develop what was then called manoeuver warfare doctrine, so that manoeuver warfare was not just words.[32] The concepts needed to be embedded and adopted in practices to make it part of the Marine Corps' culture. Critically, he argued that the Marine Corps needed to build the concepts into Marine education, curricula and training, and he called for a reading program to broaden young Marines' minds. Gray was at the time not just open to manoeuver warfare but had lived and practiced it too. He served as commanding general at Marine Forces Atlantic and in 1987 became just the right leader to work through the "suffocating muck

of bureaucracy." In part, due to his efforts to promote a lively intellectual debate around manoeuver warfare, manoeuver warfare moved from the edges of Marines to become a core organizing principle in less than a decade. With many of the intellectual pieces in place, the time was ripe for a paradigm shift and for the ideas to be built into the organization, including its practices, educational materials, and training.

## THE IMPORTANCE OF READING AND EDUCATION

Gray promoted not just intellectual debate, but intellectual development among Marine Corps personnel. Gray believed in professional development by extensively studying warfighting, and said, "The only way that I know that you can fully prepare yourself for battle, is to know what the hell you're doing. This requires study, this requires thinking, this requires talking to each other, this requires learning over a long period of time."[33] Gray was an unusually scholarly officer, and this is highlighted in the *Warfighting* manual: "A leader without either interest in or knowledge of the history and theory–the intellectual content of his profession–is a leader in appearance only."[34]

As such, Gray established the Commandant's Reading List in 1988. The reading list is comprised of a common list of books and other publications for all Marines, with additional readings depending on an individual Marine's rank. These readings are intended to help Marines learn about the institution of the Marine Corps, the profession of warfighting, and lessons about leadership and history pertinent to the Marine Corps and its operations.

Gray's dedication to reading is famous: "When he was at Camp Lejeune he amassed an enormous library of films, books and monographs on the techniques of war that was open to all his officers. He has encouraged the examination of such techniques as manoeuver warfare, which reduces the reliance on fire power and technology."[35] The current Secretary of Defense has recently emphasized the role of the Marine Corps reading lists.[36] Gray's emphasis on reading represented a shift from traditional military culture.

> "The American military, along with many European militaries, evidenced a disdain for overt intellectual activities by its officers for much of the nineteenth and twentieth centuries. To most officers, such interests fell short in reflecting the manliness expected of those in uniform. Hard fighting, hard riding, and hard drinking elicited far more appreciation from an officer's peers than the perusal of books… Seeds of this anti-intellectualism remain, despite the efforts of several generations of reformers dedicated to improving professional military education."[37]

## BOOT CAMP AND TRAINING

> "Much more than the other branches, they place pride and responsibility at the lowest levels of the organization…'Every Marine is a rifleman' states one key Corps motto. It means the essence of the organization resides with the lowest of the low"[38]

Boot camp makes each Marine into a reproduction of every other marine. They do not have individual styles and are discouraged from acting as individuals and even discouraged to think of themselves as individuals. They dress alike. They move alike. They talk alike. They think alike. They learn to eat like a Marine, sleep like a Marine, and breathe like a Marine. Marine Corps basic training is a place where Marines are indoctrinated with the values of the Marine Corps and identification to the organization. Boot camp is specifically designed to inculcate loyalty.

In other words, the Marines cultivate and build a kind of organizational loyalty and identification that encourages a "learned selflessness" and concern beyond one-self. Their leaders live and teach by example to put others and their organization ahead of themselves. This is very different than standard notions of self-interest, hero-individual-leaders, and opportunism in the management and organizations literature. It is boot camp (or basic for officers) where Marines get their first full-on contact with the Corps' culture. In his book about boot camp, Tom Ricks observes that

> "The Marines are distinct even within the separate world of the US military. Theirs is a culture apart. The Air Force has its planes, the Navy its ships, the Army its obsessively written and obeyed 'doctrine' that dictates how to act. Culture–that is, the values and assumptions that shape its members–is all the Marines have. It is what holds them together…Theirs is the richest culture: formalistic, insular, elitist, with a deep anchor in their own history and mythology."[39]

## SUMMING UP: LEADERSHIP AS DISRUPTION

> Manoeuver warfare and the *Warfighting* manual was a disruptive innovation in the Marine Corps, but in order for it to have sustaining effects, it had to be embodied in the soul and DNA of the organization. For manoeuver warfare to take its place as the Marine Corps' organizing principle, several organizational factors needed to be in place. Central to manoeuver warfare's success was the role of Gray in pushing forward learning and experimentation, intellectual debate, reading, and building loyalty in boot camp. These factors combined to

push manoeuver warfare from a periphery theory to a central Marine Corps doctrine. In the next section, we explore some more general organizational lessons from the manoeuver warfare example.

## SOME ORGANIZATIONAL AND MANAGERIAL IMPLICATIONS: THE NATURE OF THE PROCESS OF DISRUPTIVE CHANGE AND HOW TO MANAGE IT

> "We must guard against overreliance on technology. Technology can enhance the ways and means of war by improving man's ability wage it, but technology cannot and should not attempt to eliminate man from the process…Better equipment is not the cure for all ills… Any advantages gained by technological advancements are only temporary."[40]

> "Since we have concluded that war is a human enterprise and no amount of technology can reduce the human dimension, our philosophy...must be based on human characteristics rather than on the equipment of procedures…Our philosophy must not only accommodate but must exploit human traits such as boldness, initiative, personality, strength of will, and imagination."[41]

### *LESSONS AND IMPLICATIONS*

*1. Learning from forgotten failures and pursuing organizational and strategic transformation through "evolution with design"*

One of the paradoxes of organizations is that the more they build capabilities to do one thing, the less inclined they are to do others. Management scholars have pointed to the importance of ambidextrous organizations: those that can manage and balance both exploration and exploitation. Embracing a metaphor of organizational management as one of evolution with design emphasizes the continuing strategic transformation and renewal of organizational capabilities as well as using and refining existing ones.

Managers can help create a better environment for this through strategic design of organizational and psychological architectures to facilitate learning, including learning from failures and hypothetical histories. Also central is an environment where ideas matter at least as much as rank; new ideas often do not come from the top of the organization, and if organizational members do not feel free to speak up, then ideas will never reach the top. Google and

others are famous for having structures for experimental thinking. RAND Corporation, many years before, had carefully thought of this as well. It is essential to have an environment that encourages creative thinking. A former commandant of the Marine Corps University noted that he wanted a place where "freedom of thought was not only encouraged by rewarded. The idea is that the experimentation should be taken to the failure point…that only by reaching that point would we understand the unknowns."[42]

Change takes time and much trial and error learning. The forgotten failures are essential parts of the process of disruption too, and they need to be cultivated. After-action reviews and other methods to capture essential lessons from failures could help to promote a learning culture within an organization. Also, emphasizing the incremental nature of change is beneficial; even seemingly revolutionary change is often evolutionary and more incremental in nature.

*2. Inertia*

Inertia is often a great barrier to disruption, good or bad. Organizational leaders and designers can attempt to avoid the negative effects of disruption by building disruption into the design and structure of the organization. Gray built disruption by promoting intellectual debate and thinking among regular Marine Corps personnel, such that they saw the value of manoeuver warfare doctrine and were willing to break out of inertia. Such organizations have a greater chance of achieving momentum.

*3. Value of "innovation in the small" and slow innovations*

"Innovation in the small," or more incremental innovations, can have a profound disruptive impact, but it may be a different kind of disruption than often emphasized. Disruptions need to be assessed based on their effect on the organization's goals, not on their perceived importance.

While popular treatments of disruption focus on instant success stories, innovations often take a very long time to develop and implement. For example, carrier innovation began at the end of World War I but did not become a core capability until World War II.

*4. The evolutionary and organizational nature of disruptive changes*

Disruptive change is not just about technology, or just processes, but works when unlocking mechanisms that are organizational and behavioural as well. The capabilities for managing these are central for creating and maintaining competitive advantages. With disruptive innovation, it is tempting to study the technologies at work, but disruption is domain for the intersection of technology, human nature, organizations and society. As such, focusing on

the organizational processes that lead a disruptive innovation into adoption is valuable for understanding how disruption affects organizations.

5. *Embracing uncertainty, not repressing it*

> "In the 'fog of war' there is chaos, and in that chaos opportunities present themselves."[43]

Disruption and innovation is at the heart of uncertainty. Behavioural theory and capabilities-based strategy embraces uncertainty and ambiguity, rather than trying to repress it. The competition organizations face involves uncertainty, but if embraced rather than assumed away, one can also help shape the competition going forward. This requires understanding the psychologies of competitors, as well as trying to create and utilize asymmetries in the competition to create and sustain competitive advantages. At the heart of this is a behavioural conception of decision-making with individuals limited in their rationalities and computational powers.[44] One basis of management in organizations is the ambiguity and uncertainty inherent in all decision making. Addressing such ambiguity requires developing behaviours to facilitate shared perceptions and beliefs, starting with the leader's vision and an understanding of the nature of the organization and its strategic environment.

## CONCLUSION

> "Theory cannot equip the mind with formulas for solving problems nor can it mark the narrow path on which the sole solution is supposed to lie by planting a hedge of principles on either side. But it can give the mind insight into the great mass of phenomena and of the relationships, then leave it free to rise into the higher realms of action."[45]

The successful implementation of any disruptive innovation depends on thinking hard about changes to the external environment and by performing "behavioural competitor analysis." The RMA thinking referenced earlier (a widely acknowledged disruptive change) began by studying how the Soviets were studying changes in warfare; the USMC manoeuver warfare also came about by understanding the long-term strategic environment in different ways. Such examples point out the importance of experimentation and embracing disruptive thinking that may not work; emphasizing the management processes underlying disruption; and understanding how competitors work and think as a key driver of one's own organizational strategy.

## ENDNOTES

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3. Clayton M. Christensen, "The Ongoing Process of Building a Theory of Disruption," *Journal of Product Innovation Management* 23, no. 1 (January 2006): 39–55, doi:10.1111/j.1540-5885.2005.00180.x.
4. We are aware that military organizations differ from business organizations in several aspects. For example, military organizations do not serve customers in the traditional sense – they are designed to provide capabilities that serve national strategic interests. Competing in business context is also different; the rules of the game and of engagement differ, and one does not kill competitors.
5. Terry Terriff, "Innovate of Die: Organizational culture and the origins of maneuver warfare in the United States Marine Corps," *Journal of Strategic Studies* 29, no. 3 (2006): 475-503.
6. Clayton M. Christensen, *The Innovator's Dilemma : The Revolutionary Book That Will Change the Way You Do Business* (HarperCollins, 1997).
7. Jeffrey T. Macher and Barak D. Richman, "Organisational Responses to Discontinuous Innovation: A Case Study Approach," *International Journal of Innovation Management* 8, no. 1 (March 2004): 87–114, doi:10.1142/S1363919604000939.
8. Giovanni Dosi, "Technological Paradigms and Technological Trajectories," *Research Policy* 11, no. 3 (June 1982): 147–62, doi:10.1016/0048-7333(82)90016-6.
9. Andrew F Krepinevich, "The Military-Technical Revolution: A Preliminary Assessment" (Washington, DC, 1991), http://csbaonline.org/uploads/documents/2002.10.02-Military-Technical-Revolution.pdf.
10. Secretary Mattis has also written about the importance to not overemphasize technology: "Thanks in large measure to the experiences in Afghanistan and Iraq, there is less talk in Washington these days about revolutions in military affairs (RMA) or defense transformation based solely on technology. Our fascination with RMAs and transformation has been altered once again by history's enduring lesson about the predominant role of the human dimension in warfare. Our infatuation with technology was a reflection of our own mirror imaging and an unrealistic desire to dictate the conduct of war on our own terms" (James N Mattis and Frank Hoffman, "Future Warfare: The Rise of Hybrid Wars," *Proceedings Magazine* 132/11/123 (2005), p. 18)
11. Rebecca M. Henderson and Kim B. Clark, "Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms," *Administrative Science Quarterly* 35, no.1 (March 1990): 9-30.
12. There are also different drivers of innovation. These can be technology-driven (e.g. introduction of continuing aims gunfire in the Navy or the introduction of nuclear propulsion into submarine force). These often involved the use of new technology to perform existing operations better. Another class of disruptions in military organization involves changes in ways of thinking. For example, carrier warfare and amphibious warfare – these are examples of the use of both new and old technology to create new ways of competing and fighting. Although there were experiences in the United States, British, and Japanese militaries with amphibious warfare before and during the

First World War, it was not until the interwar years that amphibious warfare became developed as a key "strategic capability." Earlier operational experiences with amphibious assaults had not translated into a disruption of warfare until the necessary complementary organizational and managerial capabilities were in place. And even then, the implementation of the "disruptive" elements that amphibious assault constituted depended on the political, organizational and cultural elements in the eco-system and strategic context. In other words, many factors facilitate and enabled the innovation. See Williamson Murray and Alan R. Millet, *Military Innovation in the Interwar Period* (Cambridge University Press, 1998) and Mie Augier and Jerry Guo, "Overcoming Negative Leadership Challenges Through We-Leadership: Building Organizational Identification and Commitment, with Inspiration from the United States Marine Corps," in *Negative Leadership: International Perspectives*, ed. Daniel Watola and Dave Woycheshin (Kingston, Ontario: Canadian Defence Academy Press, 2016), 267–84.

13. Niccolò Machiavelli and N. H. Thompson, *The Prince*.

14. We have discussed the leadership aspects in Mie Augier and Jerry Guo, "Overcoming Negative Leadership Challenges Through We-Leadership: Building Organizational Identification and Commitment, with Inspiration from the United States Marine Corps," in *Negative Leadership: International Perspectives*, ed. Daniel Watola and Dave Woycheshin (Kingston, Ontario: Canadian Defence Academy Press, 2016), 267–84.; and some elements of the routine dynamics in U.S. Marine Corps in Jerry Guo and Mie Augier, "The Dynamics of Rules, Learning, and Adaptive Leadership: Inspirations and Insights from the United States Marine Corps," in *Overcoming Leadership Challenges: International Perspectives*, ed. Douglas Lindsay and Dave Woycheshin (Kingston, Ontario: Canadian Defence Academy Press, 2015), 185–202. Here, we focus mostly on the management and leadership of the transformation of the U.S. Marine Corps itself as it illustrates the interaction between individuals, organizations, routines, and other elements involved in organizational change and innovation.

15. Bridge M. Keane, "Every Marine a rifleman begins at recruit training." Marines.mil. http://www.tecom.marines.mil/News/News-Article-Display/Article/528587/every-marine-a-rifleman-begins-at-recruit-training/.

16. U.S. Marine Corps, *Warfighting* (Washington, D.C.: Department of the Navy, 1997), p. 72.

17. Ibid., p. 4.

18. Inspired by Sun Tzu, and in keeping with the Marines' embrace of uncertainty, maneuver warfare is about embracing and even creating ambiguity and uncertainty: "Manoeuver warfare seeks to shatter the enemy's cohesion through rapid, focus and unexpected actions which create a chaotic situation with which the enemy cannot cope" (U.S. Marine Corps, *Warfighting* (Washington, D.C.: Department of the Navy, 1997), p. 73).

19. Allan Reed Millett, *Semper Fidelis : The History of the United States Marine Corps* (Free Press, 1991), p. 611.

20. Ibid., p. 633.

21. Ibid., p. 611.

22. Nicholas M. Horrock, "To New Boss, Marines More Than a Career," *Chicago Tribune*, June 21, 1987.

23. Scott Laidig, *Al Gray, Marine : The Early Years, 1950-1967* (Potomac Institute Press, 2012), p. 355.

24. Paul K Van Riper, "Planning for and Applying Military Force: An Examination of Terms" (Carlisle, PA, 2006), p. 49-50.

25. Ibid., p. 50.

26. U.S. Marine Corps, *Warfighting*, 1997.
27. S.W. Miller, "Winning through Maneuver: Part I - Countering the Offense," *Marine Corps Gazette* 63, no. 10 (1979): 28–36.
28. William S. Lind, "Defining Maneuver Warfare for the Marine Corps," *Marine Corps Gazette* 64, no. 3 (1980).
29. G.I Wilson et al., "The 'Maneuver Warfare' Concept," *Marine Corps Gazette* 65, no. 4 (1981).
30. The *Gazette* debate had helped open the minds of the organization by bringing out the debates and the controversies for people to think through and about. Now, onto reforming the training, education, and documents needed to ensure the continuing building and unfolding of the manoeuver warfare movement.
31. Michael D Wyly, "War Without Firepower?," *Marine Corps Gazette* 67, no. 3 (1983).
32. William S. Lind, "Preparing for Maneuver Warfare," *Marine Corps Gazette* 68, no. 6 (1984).
33. Horrock, "To New Boss, Marines More Than a Career."
34. U.S. Marine Corps, *Warfighting*, 1989.
35. Horrock, "To New Boss, Marines More Than a Career."
36. Secretary Mattis reportedly even prepared his own reading list for his officers deploying to Iraq: https://www.washingtonpost.com/news/on-leadership/wp/2016/11/23/the-avid-reading-habits-of-trumps-potential-secretary-of-defense-james-mad-dog-mattis/
37. Riper, "Planning for and Applying Military Force: An Examination of Terms, p. 35."
38. Thomas E. Ricks, *Making the Corps* (Scribner, 1997), p. 19.
39. Ibid.
40. U.S. Marine Corps, *Warfighting*, 1989.
41. Ibid.
42. This quote was obtained via a personal conversation with the author.
43. Ibid., p. 18.
44. This has been at heart of behavioral ideas since Simon's landmark articles in the 1950s explicating the dynamics of the limits to rationality and satisficing. It was also embraced by Marines: "A military decision is not merely a mathematical computation. Decision making requires both the situational awareness to recognize the essence of a given problem and the creative ability to devise a practical solution. These abilities are the products of experience, education, and intelligence."(U.S. Marine Corps, *Warfighting*, 1997, p. 86).
45. Carl von Clausewitz, *On War*, p. 578.

# CHAPTER 8

## LEADER INFLUENCE TOWARDS A CULTURE OF EMPOWERMENT

***Major Steven D. Raymer, MS; Christopher Kelley, PhD; and Major Matthew Laney, MA****

Advancements in information technologies have accelerated the speed and flexibility of communication with an associated increase in the ambiguities within interpersonal interactions. Innovative behaviours are needed to maintain effectiveness given increasingly complicated, ill-defined problems requiring novel and flexible solutions.[1] For organizations like the military, previous approaches to problem solving (e.g., conventional use of force) are often misaligned with current challenges to provide peace, stability, and social responsibility. In an organization that excels at violence, built on a culture of projecting dominance, resistance is common towards fresh perspectives and advanced solutions that operate outside prevailing institutional logic. As a result, creative individuals may experience a diminishing sense of efficacy in the face of new and increasingly complex problems. Fresh initiatives are often thwarted by bureaucratic procedures or an organizational culture that lacks flexibility. A burden exists for leaders to align others towards organizational goals and enable their contributions. This requires removing constraints and resisting the urge to impose new controls that often impede the development of new approaches.

Technological advances in the workplace consistently increase the drive toward specialization, expertise, and expectations for superior performance. One consequence of advances in performance enhancing technology is the creation of "stovepipes of excellence." These inter-organizational silos tend to limit, rather than enhance, the application of innovative approaches to mission objectives. This becomes clear when parts of an organization excel in their domains while other parts lag behind. As problems are solved in one stovepipe, the capacity to employ similar solutions in other domains is hampered by outmoded organizational constraints.

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* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the United States Air Force Academy or the United States Air Force.

## UNITED STATES OF AMERICA

Empowerment strategies allow leaders to establish an outcome-oriented approach to their mission by increasing the alignment of subordinates with mission objectives. This alignment allows leaders to facilitate an organizational structure and culture that is empowering to members in their roles. A culture of empowerment can be useful for developing a more flexible and adaptive organization with greater transparency and increased effectiveness in pursuit of a truly shared mission. Figure 8.1 illustrates the "domains of convergence" as they affect one another to create both a structure and culture of empowerment within an organization. Here, the leader's approach in setting a strategy and goals forms the crucial link between greater mission objectives and an individual's level of engagement. Member empowerment is enhanced through increased identification with their individual roles as part of the larger mission.[2]

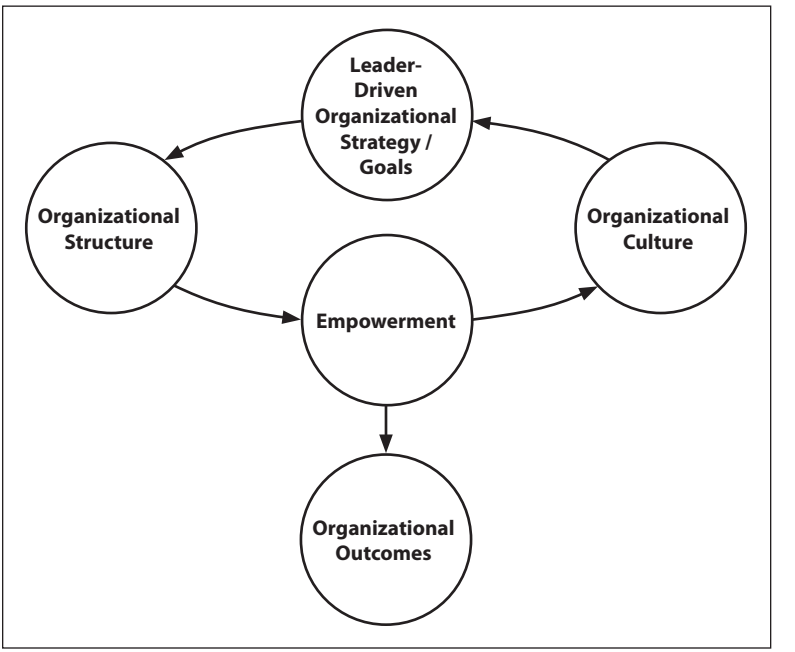


**Figure 8.1 Domains of Convergence Towards Aligned Organizational Purpose**

This chapter will walk through these domains to explain their role in establishing an aligned organization. While alignment is the ideal, empowerment is the guide that directs how each domain must be shaped in order to achieve the desired end state. After briefly addressing the role of

empowerment in creating alignment, we will work downward through the model starting with the leader's roles in setting a strategy. The domains of organizational culture and structure will establish the path needed to achieve member motivation (i.e., a sense of empowerment) and the associated influence members will have on the organization as their motivation increases. With the appropriate framework and impacts established, we will finish with implementation suggestions at any level of the organization.

## EMPOWERMENT AS A FOUNDATION FOR ALIGNMENT

Power conveys the capacity to influence others' thoughts and actions. The allure of power promises opportunity to improve the lives of others by generating positive changes in areas of influence. However, power is often used as a means to exert control over others, which can lead to resistance, resentment and disconnection.[3] Excessive control can result in compliance at best, though resistance is more likely,[4] leading to perpetual power struggles and sub-optimal performance results.

Empowerment can be viewed through structural and psychological conditions within the organizational environment. Structural elements focus on the roles, policies, characteristics, and job design within the organizational domain.[5] Psychological empowerment is defined as "increased intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to his or her work role: meaning, competence, self-determination, and impact."[6] The pivotal principle is that empowered individuals maintain an active orientation towards their work situation and exercise their belief in their ability to shape the work environment through action.[7]

Empowerment acts as the guide between the organizations strategy, member engagement, and organizational outcomes. The culture and structure of the organization represent the values of the mission and its members. Transparent communication of these values establishes convergence which creates a foundation for motivated workers. The role of an effective leader is to advocate strategies and goals in support of these values. In this capacity, leaders create influence acting as the lens through which members see the organization. Effective leaders work to align individual member and team needs with the greater organizational strategy, which enhances member motivation and organizational outcomes.

## LEADER-DRIVEN ORGANIZATIONAL STRATEGY AND GOALS

A thoughtfully crafted organizational strategy is the first step in creating the alignment that leads to a culture of empowerment. Strategy should provide guidance for members to understand decisions concerning the direction, goals, and approach captured in day-to-day operations at the individual level. Proper alignment means that any individual can link their daily tasks to the overall accomplishment of a larger strategic objective. Goal-oriented organizational policies, actions and programs are a primary means for gaining member commitment.[8] When strategy appears as a means of control rather than guidance, members may perceive leaders as micromanaging, which can lead members to disengage from strategic outcomes and resort to survival mentalities.

Projecting organizational strategy is typically accomplished through vision casting with long-term goals to provide members with a picture of what that organization intends to become. Goals crafted towards mission accomplishment highlight expectations while demonstrating values necessary to carry out missions. The level of consistency between values, mission, and vision influences members' perceptions of alignment.

Common goals and outcomes encourage collaboration between organizational functions and their related activities. With proper integration, these activities complement one another to generate strong interdepartmental links.[9] These links can be degraded when leaders consistently refer to select components as the "core" competency or the most "critical" success factor. This can create perceptions of certain roles or missions as less deserving of recognition, creating rifts between organizational components. While a given mission may have a clearly identifiable "critical" component, the focus on those components over time creates a "stovepipe" mentality that eventually leads to degradation of future mission accomplishment. For instance, the propensity to focus on destructive capacity in our military force has led to a degraded capability to conduct stability and de-escalation operations. This limits the competitive strategy that defines military capacity and the ability to accomplish operations when another government strategy fails. Falling back on destructive approaches has led to an incredible development in the massive application of power, while limiting the capabilities and effects of guerilla warfare and small scale influence operations.

Furthermore, military strategy has long been a driving factor in technological advancement. Modern life owes much of its comforts to military necessity

driving growth in communication, travel, logistics, and electronics. However, the benefits of technology have become so ingrained in society that the primary driver for growth has swung towards the private sector. Now, advancements are being made faster than most military organizations can handle, largely because the strategy of the organization has relied so heavily on the control aspect of command and control that it cannot adapt rapidly to the technology that thrives on dispersed power.

Addressing this new environment requires a new mindset. Technology must be allowed to drive part of the corporate strategy if organizations wish to stay relevant to the world it hopes to influence. No radical shift in strategy is required. Rather, technology can be used to establish organizational convergence. We propose four primary strategies for empowerment through convergence: consistency, reinforcement, optimization and community.

Consistency means that all components take similar approaches to achieving corporate strategy. Like doctrine, everyone has a starting point from which they can deviate as necessary to accomplish the mission in their given area. However, if anyone were to observe their own actions, they could trace them back to the original doctrine.

Reinforcement focuses on rewarding initiatives based on team efforts that contribute to mission accomplishment. Individual rewards for team accomplishments can create conflict, reinforcing values that may diverge from mission objectives. Team rewards focus members on the team rather than on themselves. Additionally, the context of work performance parameters can reinforce approaches to problem solving. For example, written guidance could focus less on restraints (what you cannot do) and more on the ideal outcome to be achieved. Enforcing restraints diminishes the value of accomplishing larger objectives that do not have standard fixes.

Optimization occurs when members see meaning in their role, experience organization-assisted development, and in turn contribute to developing the organization. Goals designed to produce communal growth and achievement will emphasize and support these processes. An overt focus on maintaining unnecessary standards limits adaptation to evolving operational domains.

Community requires efforts that assure members maintain a sense of belonging to the organization. This produces member commitment to one another and to the shared ideals they are working towards. The greatest impact on community comes from a culture of mutual respect and support. This is primarily demonstrated when an organization is able to achieve its purpose without compromising its values. The sense of community allows

members to internalize organizational values. When values are imposed as a control mechanism by those in positions of leadership, it can weaken the community and diminish members' sense of belonging.

## THE ROLE OF LEADERS IN SHAPING EMPOWERING STRATEGIES

Within traditional hierarchical organizations, such as the military's rank and power structures, leader focus gravitates to command and control. Hierarchies are intended to allow information to flow up the chain of command to single points of control and to allocate resources or determine decision options. This organizational design was developed when people first organized into military, bureaucratic and other social institutions to coordinate the activities of people working together in large groups. However, the technical demands of people within roles at the lower levels of organizations have increased while, simultaneously, the capacity to communicate within and across larger groups has increased. Unfortunately, this approach to decision-making often lags behind changes in organizational roles and technology.

Leading for empowerment includes efforts to maintain organizational transparency and assure alignment of work efforts with overall goals. This includes ensuring obsolete procedures do not impede members. Perceived organizational support can be adversely affected by poor leadership interaction, which in turn can decrease levels of organizational commitment.[10] Member perceptions of leadership affect the degree to which subordinates carry out orders and their level of obedience to that leader.[11] In other cases, leader actions heavily influence values shaping the organization's culture. Lack of leader representation for members can perpetuate a negative culture as the leader is viewed as "towing the party line."[12]

To overcome these difficulties, leaders must first work to create opportunities for members while limiting organizational constraints. They should avoid introducing new administrative obstacles, and should take responsibility for overcoming problems created by traditional or outmoded means of operation. They should foster initiatives that allow units and individual members to excel and innovate within their roles. Empowering leadership requires a keen understanding of the need to align organizational and member roles while promoting the effective distribution of decision-making authority. It also requires continued efforts to provide members with the opportunities, support, and vision they need to perform at optimal levels.

## ORGANIZATIONAL STRUCTURE

The conditions for empowerment require the development of the structural components.[13] A clear structure and the use of team-based work enable self-determination while generating greater meaning for individuals' roles within the organization. The existence of relevant training opportunities supports the development of worker competencies. Rewards for initiative support the perception that an individual is making an impact in their contributions and these contributions support larger organizational objectives. Sharing information supports all psychological characteristics of empowerment, as it can generate alignment of organizational vision and work roles through communication. While the structural characteristics are more observable, the psychological characteristics represent the level of perceived empowerment.

The psychological characteristics build from the structural characteristics to explain the human response within a working environment. Meaning, derived from Hackman and Oldham's Job Characteristics Model,[14] captures the congruence between an individual's value, beliefs and behaviours and those of the organization and work role.[15] Competence reflects an individual's ability to adequately perform work activities.[16] Self-determination reflects autonomy with regards to one's work behaviour, regulation of actions, and ability to process decisions about pace, effort, and work methods.[17] Finally, impact refers to the level of influence on operations, company direction, or processes based on one's contributions.[18]

Given the need for a supportive organizational structure, organizations can use a common approach to build a framework for creating a sense of psychological empowerment. First, a positive probability of success and a responsive work environment are necessary to support the impact and competence dimensions of empowerment.[19] These dimensions can be fulfilled by acknowledging past success, recognizing current accomplishments, and encouraging, future success. Second, the meaning dimension of empowerment can be satisfied when individuals sense that their intrinsic needs may be fulfilled through engagement in upward influence to direct larger organizational outcomes. Specifically, individuals must feel aligned towards greater organizational objectives and understand the weight of their contributions towards an overall organizational impact. Third, individuals with a sense of control over their work environment will exhibit greater desire to influence decisions made at higher levels.[20] This sense of control can be fostered through latitude within one's workplace offered by leadership, administrative support, and an organizational structure which establishes the sense of self-determination needed to fully execute objectives. Finally, the competence dimension is correlated with an individual's level of self-efficacy

in their organizational role.[21] This can be increased through both role specific training opportunities and smaller tasks and responsibilities that generate a positive anticipation of success.

## ORGANIZATIONAL CULTURE

The concept of organizational culture is one of the most complex issues in the workplace and it has the greatest implications for psychological response to the workplace.[22] An organization's culture represents the roles, norms and values that inform and contribute to daily interactions between personal and their work environment.[23]

Value-based models of organizational culture have demonstrated significant relationships between culture and work-based outcomes.[24] For instance, bureaucratic cultures, which tend to lack value congruence, tend to lag in organizational performance.[25] When struggling to adapt, these organizations demonstrate a lack of long-term growth, and, in some cases, can fail. Conversely, organizations with adaptive orientations remain sensitive to conditions external to the organization, actively grow, and compete using a culture that values innovation.

A lack of value congruence has been shown to create conflict and impede goal achievement.[26] However, the perceived values of an organization may be affected or even radically altered by leadership actions.[27] Leadership actions, combined with a lack of organizational transparency, will impact the perceived organizational culture and will likely affect organizational outcomes.

Accounting for organizational cultures requires guiding features of adaptation, expertise and specialties within the organization. Through flexible structures and modes of governance, members perceive levels of responsibility with greater meaning and increased commitment to achieving a given task. Adaptation captures the delicate balance between efficiency of operations with a willingness to respond to changing environmental conditions. The essential organizational features to consider are those with the most need for flexibility in response to change.

These features include the degree of specialization within organizational roles, organizational structure, and modes of governance within leadership roles. The degree of specialization in roles focuses organizational patterns of coordination because it affects the type of guidance needed for task accomplishment. Specialization requires expert knowledge in a role; leaders must demonstrate flexibility in understanding how to provide guidance to experts accomplishing tasks. Organizational structure can either constrain

or optimize the organization's capacity for flexibility and speed of adaptation in response to change. Modes of governance are an element of structure that reflect how leaders are expected to behave within their positions and structure of the organization.

These features, drawing from Parson's list of main organizational functions, have shown greater responsiveness to influence under transformational leadership behaviours.[28] Bass notes the importance of coupling transformational behaviours with an organization's strategy using the domains of organizational objectives, tasks, structure and climate.[29] This forms the basis for the successful development of an organizational culture of empowerment. Once the appropriate cultural conditions are established, the framework for creating a sense of psychological empowerment can be fostered.

## EMPOWERMENT

Empowerment requires both structural and psychological elements within the organizational environment. Structural power focuses on the roles, policies, characteristics and job design within the organizational domain.[30] Psychological empowerment includes a set of four cognitions reflecting an individual's orientation to his or her work role: meaning, competence, self-determination and impact.[31] The pivotal principle of psychological empowerment is that individuals maintain an *active* orientation towards their work and recognize their capacity to shape the work environment through action.[32]

Managers do not empower employees, rather they work to develop the mindset of empowerment in their employees. Specifically, people within the organization avoid actions that would limit member development or mission accomplishment set in place by the organization. Three basic assumptions clarify elements of empowerment within a given environment.[33] First, empowerment is continuous; people in organizations are either more or less empowered and the level of empowerment exists on a spectrum that varies based on the specific circumstances. Second, empowerment is dynamic; work environments are constantly changing and evolving. The complexity of a given situation changes the level of empowerment on the continuum. Third, empowerment is always context specific; what is empowering is different for individual people and elements of any organization. It varies by work environments characteristics and is limited by conditions that cannot be met or altered to increase empowerment (e.g., protection of confidential information).

## *CHALLENGES AND LIMITATIONS OF ESTABLISHING EMPOWERMENT*

While the benefits of empowerment are far reaching, the implementation can be challenging. It requires deliberate attention and consistent upkeep by the all members of the organization. The three major barriers to empowerment for typical organizations are a bureaucratic culture, conflict over resources, and personal obligations that limit organizational contributions. A bureaucratic culture is a strict hierarchical culture that impedes change. Traditional approaches and short-term thinking perpetuate the consolidation of power which in turn inhibits innovation. When there is conflict over resources, organizational elements are motivated to protect their turf, which impedes collaboration and encourages self-interested behaviour rather than organizational goals. Personal time constraints and obligations outside of the organization form a natural limitation on individuals' opportunities to contribute.

These barriers and challenges can undermine well-intentioned efforts to empower workers. In some cases, they can create negative attitudes if employees perceive a lack of value congruence between what the organizations says it expects versus how it supports those expectations. Organizations must take a systematic approach towards implementing changes that encourage and support empowerment mindsets. Unfortunately, many organizations opt for a one-size-fits-all approach to the implementation of new concepts. This approach fails to adequately capture the scope of various roles and responsibilities within that organization or take into consideration members filling distinct roles.[34] Taking account of these organizational components is difficult, uncertain, and requires dedicated effort by leaders. When faced with the need for increased commitment by members, organizational leaders may reflexively opt for control and consolidation of power at the top. However, this approach prevents member ownership of organizational outcomes. To overcome these barriers, leaders should encourage a flexible structure to create opportunities to assure that members can maintain a healthy and productive work and life balance.[35]

While these barriers tend to reflect self-inflicted constraints, there are limitations to the degree in which empowerment can take place (see Table 8.1). Most organizations have some mixture of limiting factors represented in the size, skill levels and attitudes of employees. Given the increasing complexity of organizational life and work, the magnitude of working knowledge within a company could prevent adequate flow of information. To prevent this, companies may look for ways to reduce bottlenecks and maintain

a horizontal framework. For example, Google created a separate corporation, the Alphabet holding company, to maintain flexibility of specialized services based on Google core functions. [36] The CEO removed a barrier to efficiency by allowing the Google enterprise to act with greater autonomy.

| Limiting Factor | Limiting Considerations |
|---|---|
| Knowledge Sharing versus Control of Knowledge[37] | Many organizations intentionally control knowledge due to confidentiality, operating practices, or security. The limited release of knowledge combined with a rigid structure can cause stovepipes of knowledge and decision-making in a vacuum, with unintended consequences. Additionally, the sheer size of some organizations and throughput of knowledge limits the ability to corroborate and share all useful information without causing analysis paralysis. |
| Team Efficacy[38] | Team members characteristics can vary drastically. For some organizations it is rare to have the ideal mix of skills and experience in a team environment. A lack of role expertise can undermine team confidence and degrade relations with a customer that depends on that team's production. |
| Situational Constraints[39] | Periods of crisis may be better suited to decision-making at higher levels when complex details and information need to be considered. Additionally, some roles (e.g., special operations) may require specially trained individuals to conduct unique missions directed by higher levels of leadership. |
| Employee Competency / Attitudes[40] | Employees with little knowledge, skills, and/or abilities are less likely to benefit from empowerment as they first require greater competency development. Instead, they may be better suited to more directive environments. Additionally, poor attitudes (e.g. cynicism, subversive skepticism, and being overly critical) can prevent successful empowerment if the individuals show no interest in aligning towards organizational goals or outcomes. |
| Power Distribution[41] | The latitude, authority, and ability to make decisions or take action must be deliberately released from higher levels. If power is purposely consolidated at certain levels, it can create artificial constraints or restraints that prevent the very objective that organization or leader seeks to accomplish. As summed up by Quinn and Spreitzer, "It is nearly impossible for unempowered people to empower others."[42] |

**Table 8.1 Limitations of Empowerment**

## MEMBER INFLUENCE

A lack of alignment down to the member level can cause a hyper focus on tactical performance, while collaborative efforts are lost in the churn of daily operations. Innovation, growth, and cooperation can be drowned out by the noise of the routine procedures.[43] New approaches commonly meet resistance in large organizations and are burdened by unnecessary constraints that prevent the flow of essential information across organizational boundaries. Alignment creates a framework to address routine problems and increase

awareness and visibility across organizational elements. A well-developed strategic framework in an empowered organization allows for the assessment of overarching goals while helping implement innovative solutions to novel, often unforeseen problems. This framework creates a sense of shared vision for organizational outcomes.

Enterprises are typically formed with a strategic vision guiding development purpose towards a common future. The loss of shared vision, while not intentional, is a result of a "business as usual" approach as members assume that once a reasonable level of operational effectiveness is perceived, objectives can be met. The comfort of a routine is evident in commonly proffered explanations for dysfunctions such as "that's how it's always been done" or "we can't change that". We call this problem organizational drift. Behind this reasoning, however, is an implicit need for understanding by members of why and how current methods are less valid and less effective than new approaches. Members will increase effort towards a shared vision when the logic of the process and the feasibility of the approach are clarified. While no organization intends to become misaligned, over time, processes and procedures tend to drift from well-reasoned goals. Four factors affect the likelihood of organizational drift: maintenance of alignment as a priority, ownership of alignment processes, the tendency towards continually increasing organizational complexity, and "box-checking" accountability procedures.

When alignment is not considered a priority, an organization can focus too much on consistent output among organizational units. Components of the organization are assigned a target based on ostensibly objective measures of their contribution to achieving a specific output. The alignment of overall goals becomes an assumption. Leaders tend to perpetuate perceptions of value based on quantified output. While plainly recognizable achievements are easy to quantify, they can run counter to the overall mission. Competition over resources to achieve outputs can lead to misalignment of goals and internal strife. Hence, people are no longer fighting to maintain alignment with organizational goals but are fighting within the organization for resources and influence. Leaders must ask themselves if members are striving towards organizational goals or striving to assure their perceived value within the organization.

A lack of perceived value can lead to lack of ownership for maintaining alignment. When individual components focus on their own domains, they seek to optimize their own areas rather than align and integrate across the enterprise. Rather than forcing components of an organization to create alignment, an empowered organization engages each member to work

towards alignment as the ideal end state. This creates meaning which informs and inspires their work functions.

Shared end states are critical as the size and scope of the organization grows and the mission becomes increasingly complex. Mission creep can catch an organization off guard as responsibility increases and the original intent of processes and actionable objectives become lost in the noise. The interconnectedness of a large system can become overbearing, causing "analysis paralysis" for decision makers who are overwhelmed by the possible ramifications of each option. The burden for leaders can be lessened by focusing on creating alignment within the system while relinquishing the need to control pieces of the system. The concept of "centralized command, decentralized execution" takes focused effort and constant care to nurture, maintain, and execute.

An overvaluation of procedures intended to assure accountability and thoroughness can create systems that reduce effectiveness. A focus on "box-checking" provides a false sense of accomplishing requirements while limiting achievement of essential mission objectives. Group members can become caught up in maintaining the *status quo* rather than risking failure to gain mission efficiencies. While leadership may balk at the time needed to focus on alignment, this should be the priority, as it ensures that all members are engaged in activities that are aligned, purposeful, and developmental. Busy leaders tend to allow mission creep because they are too caught up in the routine to fight the detrimental effects of increased responsibility without increased capacity. At a certain point, the organization becomes more focused on sustaining itself than on the mission for which it was originally intended. Members then lose motivation and grow cynical when their capacity to maintain alignment is derailed by immediate bureaucratic requirements which become an end in themselves. Addressing this problem requires taking an honest look at the output of regular meetings, program updates, and staffing memos to determine whether mission essential objectives are clear or if routine procedures dominate the prescriptive courses of action.

## LINKING MEMBER INFLUENCE TO STRATEGY

The actions required to develop empowerment are simple in theory, but require extraordinary effort and trust by leaders to identify, analyze, and implement the conditions necessary for success. For example, the initial action of communicating a vision and challenge requires more than eloquent words and fancy speeches. A clear vision means that every member understands the direction of that organization and their role in achieving the greater mission.

Similar to goal setting, the vision should inform actions, timelines, and steps that can be met along the way. Additionally, the challenge component implies the organization cannot meet the goal in its current capacity, but must evolve in some way to accomplish the challenging, yet attainable, goal. The vision and goals extend to the next action of fostering openness and teamwork, as the environment for teamwork is often established through a unified approach to day-to-day operations. Southwest Airlines is a common example of an airline that is successful at doing things a little differently. The company puts great emphasis on each member being part of a larger common purpose, valuing employee happiness above all other priorities.[44] This attitude impacts customers, earning the company the #1 rank in customer satisfaction for 2017,[45] as members are encouraged to approach daily tasks with their own flair, giving Southwest Airlines its "fun" vibe.

The action of discipline and lines of control is best explained using lessons learned from the military. During the Vietnam War, the U.S. Congress consolidated much of the decision-making authority and targeting responsibilities for the war. Under these conditions the United States Air Force was forbidden from engaging hostile forces or obvious lawful targets without prior consent. These artificial constraints led to unnecessary risk and loss of life, extending the war and minimizing the effectiveness of military operations. Currently, the military has developed a robust system for combat operations which allows decision-making authority at the lowest level in hostile situations. For instance, a pilot conducting an air defense suppression mission is empowered with the authority to engage potentially hostile targets. In this situation, using the established discipline for conduct in warfare, along with the command and control structure enabling decision authority, the military has increased the effectiveness of its members in combat situations.

The action of creating a support system and sense of security is crucial to support the psychological characteristics of empowerment. The need for support and security is a foundation for development and the willingness to take risks or make mistakes. The goal is to remove any perceptions that could cause defensive posturing. For example, the "brain trust" at Pixar allows a group of creative leaders to provide genuine developmental feedback in an environment that encourages pushing the envelope. If someone developing a Pixar movie did not make mistakes along the way, they are encouraged to push harder. Ed Catmull, the president of Disney animations Pixar arm, notes "while the creative process thrives with a high level of horizontal diversity, be extremely wary of the inhibiting effect of vertical diversity."[46] If a company sets challenging goals, employees need to feel they can trust the company, leadership, and peers, while feeling comfortable to openly share

feedback with one another. Given the intricate approach to each of these actions, it is imperative that leaders at every level are proactive in establishing and maintain the conditions for empowerment to exist.

Addressing technology as an interaction creates the environment for members to view their roles as working towards larger organizational goals. For example, the USAF uses a strategy-to-task methodology to ensure that all effects in an operating environment are achieved in a synchronized fashion in time and space. The enormity of major combat operations can produce hundreds, even thousands, of moving pieces in a given day. The command and control of forces in this environment can either produce incomparable power or artificially constrict operating capabilities.

The USAF command and control (C2) mechanism ensures that once engaged, all forces are involved in operations to meet a larger strategic purpose and are empowered to make the best decisions given their equipment to support the mission and best achieve the greater strategic outcome. Using this planning process provides the framework for every action to be linked to the larger mission. Given the commander's vision and intended outcome, the initial strategic objective is set. From this, all operational and tactical objectives flow, followed by tactical tasks, desired effects, and finally the tools to create those effects. With this process complete, a team of master planners build the necessary plans into a system which computes all logistical requirements to enable asset movement. Orders are then generated from this tool to inform each unit of their role in supporting the larger objective.

It takes an enormous C2 mechanism (i.e., a Combined Operations Center) full of experts to run this process every day. Ironically, the biggest problem with this technology is a lack of advanced technology. The system for generating orders runs on programs that are decades old, designed for systems with constraints that never imagined the future we now live in. In this setting, the efforts of aligned individuals relying on their creativity can overcome the outdated equipment to ensure mission accomplishment on a daily basis. In this context, the role played by leaders is critical to support these experts to find new ways to keep this system working. Positive leader behaviours will make it seem as if there is no limit to what a system can do. Negative leader behaviours will drive constant constraints, creating unnecessary inefficiencies in the system that can lead to mission failure.

## CONCLUSION

A culture of empowerment is a technology that leaders can leverage to align organizational strategy, structure and culture. This requires they engage in

the right behaviours at all levels of organization. Member motivation then flows from the understanding of their meaning and role in the greater context of the organization's strategy and goals. Every member can enact this alignment through daily interactions that actively focus on their role in the larger organizational purpose. Using empowerment as a guide, leaders should reinforce member perceptions by providing meaningful roles, and rewarding initiative, impact, autonomy, and the opportunity for advancing skills that support organizational development.

Using empowerment to generate alignment requires perspective. Linking organizational strategy to desired outcomes will drive responsive leader behaviours and produce an empowering organizational culture. Acknowledging improvements and areas for growth allows members to have a voice in the mission and generates commitment towards the organization. Leaders should consider the role of members within your sphere of influence, and seek to acknowledge their role in the mission and help them visualize the bigger picture. Once personal roles are better understood, members are better able to develop and support others within the organization and better perform their roles by understanding the larger purpose, regardless of potential constraints.

The power and influence to challenge limitations exists at every level. Participation at each level is crucial to creating the alignment towards the larger mission. As both a supporting and supported individual, leaders must thoughtfully challenge the perspectives surrounding them. Aligned organizations will benefit from cultural values and structural roles which perpetuate member support and development towards organizational strategy.

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# CHAPTER 9

## INFORMATION TECHNOLOGY AND DECISION-MAKING IN MILITARY LEADERSHIP

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The opportunities that digital technology offers look both promising and threatening. Automation, for example, helps increase economic productivity on the one hand and, on the other hand, renders many low-skilled workers replaceable. Together with big data, machine learning provides leaders with information that helps them spot new possibilities to reach their goals or even to systematically exploit weaknesses revealed through increased access to personal data and its analysis.[1] While these topics also concern the military domain, the opportunities of digital technology do affect military leadership in specific ways. The aim of our chapter is to introduce one such way and to outline how digital technology has the potential to both impede and enhance the decision-making of military leaders.

Information and communication technologies (ICTs) have changed our world since they do not only record and transmit information, but also possess processing capabilities. The prospect of having information manipulated automatically, more or less constantly–and potentially without human surveillance, control or interference–raises questions. Are these information-processing capabilities reliable? Where is human control mandatory? Where is it obsolete? Does reliance on automatic information-processing influence human perception and judgment? What are the important practical consequences for leaders and policy-makers? These questions may appear more pressing if we consider the possible combinations of recording, transmitting and processing capabilities. A machine that is capable of gathering and transmitting new information based on the output of its own processes will be independent of humans selecting and feeding it information to record, process and transmit. Such a machine becomes an independent information-source and, as it is the case with all information sources, we may question the reliability and quality of its output.

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the Military Academy or the Swiss Armed Forces.

## INFORMATION AND COMMUNICATION TECHNOLOGIES IN POPULAR CULTURE

To better understand the impact of these developments on society and the military–the domains within which military leaders act and on which they depend–analyzing movies or other forms of art (e.g., literature or video games) can be useful. Quality movies, which will be our focus in this chapter, reflect the social concerns, fears, ideologies and values of the time of their production. They can distill complex questions into visual narratives and thus reach people from different classes. In terms of impact, their overall range is broader than that of academic studies which usually address an exclusive audience. If successful enough, films do generate and inform public discourses. Through telling images, visual explanations become available, as movies compress influences from the real world into fictional stories which, if done well, are direct, clear and lack irrelevant details that would waste screen time and lower attention spans.

The idea of independent machines taking fatal decisions in military settings is, for example, nothing new. During the Cold War, the great threat also involved ICTs and there were several incidents when the world was on the edge of destruction because of defunct technology or falsely-processed information. For example, in 1983, Russian Lieutenant Colonel Stanislav Petrov faced a chilling dilemma when he encountered a false early-warning of a nuclear attack from NATO forces.[2] His superiors left the decision on how to interpret the information from the warning system up to him and, thankfully, he decided to see it as a false alarm. This incident is an example of the importance of human leaders who can and will assess computer-gathered information. One lesson learned is that information quality matters–especially in the military domain. Another is that even under enormous pressure, military leaders must retain the possibility to decide against what ICTs has concluded.

During the Cold War, nuclear war movies were popular and often reflected political reality. The first half of the 1980s was a time when the threat of nuclear war became increasingly real. President Ronald Reagan was leading the United States, implementing his utopic Strategic Defense Initiative (SDI) also known as "Star Wars", and pursuing a general roll back strategy against the Soviet Union.[3] Movies like *The Day After*[4] or *Threads*[5] depicted a very grim future, a world completely destroyed by nuclear war, and reflected a climate of fear during these years.

While most of these movies focused on a bleak aftermath, *WarGames*[6] was an optimistic story about avoiding a hypothetical Third World War. Apart

from the movie's prophetic idea of cyberwarfare and hacker-culture,[7] it is also a strong example of the limits of ICTs. During a simulation of a nuclear attack, NORAD (North American Aerospace Defense Command) realizes that 20% of their employees aren't willing to turn the key for a counter-strike and bear the deaths of millions. So it starts using Joshua, a computer trained in every strategic game, from chess and bridge on up to "global nuclear war." Unable to recognize the difference between reality and a game, the computer accidentally starts a game of nuclear war after having been hacked by a teenager. Joshua is designed to master every strategic scenario and able to learn from his mistakes, constantly getting better through machine learning. Joshua's only aim, due to his program, is to win the game. Admittedly, it is a bit of a stretch to assume that such a sophisticated military computer would not have been taught the basic concept of the ultimate escalation, mutually assured destruction, but for dramatic purposes it shows us how much ICTs depend on what they are fed by their creators and on how they have been programmed; a simple glitch can ruin the whole performance and thwart the machine's original purpose.[8]

When the US military takes the simulated threat seriously, believing the Soviets have actually launched an attack in response to Joshua's gameplay, the creator of Joshua challenges the general in charge of a counter-strike: "Do you think the Soviets would start a full-scale attack without provocation? It's a machine, stop thinking like one." But Joshua still runs the program and wants to win the game, so they challenge him to play a game of Tic Tac Toe against himself. With every scenario exercised, Joshua realizes the outcome and pointlessness of the game and concludes "the only option to win the game is not to play." The movie also influenced the video game industry. In games like *Theatre Europe*, a player can side with NATO or the Warsaw Pact, but the only way to win is to never initiate a nuclear first strike. The irony is similar to the movie: if you play the game with nuclear action, you lose; if you choose not to trigger this escalation, you win.

In the 30 years since *WarGames*, contemporary ICTs have evolved. Some writers (e.g., Luciano Floridi[9]) have argued that we should see the contemporary challenges and opportunities that ICTs provide from a holistic point of view, because they profoundly affect human self-understanding by influencing how we interact with the world and with others, by channeling how we interpret (even perceive) events, and by creating and shaping virtual and physical realities (e.g., the internet of things). For Floridi, the challenges and opportunities associated with ICTs change the human situation just as much as the Copernican, the Darwinian and the Freudian revolutions did; hence,

he writes about a fourth revolution.[10] From such a point of view, we must not conceive of ICTs simply as tools to interact with the world and others. ICTs now constitute a new domain, the infosphere, a context in which human life evolves while constantly conditioning and being conditioned by a vast variety of interconnected physical and virtual facts.

The idea of such an infosphere and how it may manifest is not a new one; we need only look to narratives from science-fiction. In 1909, E.M. Forster published the short story, *The Machine Stops*, which introduced the idea of an internet and instant messaging nearly a hundred years before these digital tools became reality.[11] The story takes place in the future where humanity lives underground, isolated in individualized spaces. All needs are provided by an omnipotent machine, which has a godlike status for mankind, because people have forgotten it was once built by man himself. The term "infosphere" was first used in the science-fiction novel *Hyperion* by Dan Simmons in 1989, which described an informational environment.[12] As often with science-fiction, some ideas become reality at a later point in time, and the idea of an advanced, intelligent infosphere was introduced there, with a dystopian society run by a Technocore, a self-aware conglomerate of artificial intelligences, and surrounded by a Datasphere, an intelligent web of data similar to a highly advanced version of the internet which regulates every aspect of technology similar to the machine in Forster's short story.[13]

The idea of an intelligent and interactive virtual surrounding has also been partly conceptualized in Kubrick's *2001: A Space Odyssey*[14] as early as 1968 with the artificially intelligent computer HAL[15] who communicates with the crew of a spaceship and consists of a mechanical core of consciousness located in a crawlspace of program modules which can be physically removed or installed by the crew. Additionally, William Gibson's *Neuromancer* [16] introduced the idea of data made into flesh as well as a global information cyberspace and brain-computer interfaces which suggests how virtual reality and the internet may one day blend together into a physical environment. Such cultural reflections of artificial intelligence and the idea of a bio-technological symbiosis have become more real in recent years, with all sorts of digital gimmicks seemingly supporting our everyday live, from the digital voice helper SIRI, to geomatic functions and maps, to personalized health checks. The way these applications are integrated into all forms of continuously upgraded tools like tablets or smartphones is possibly only one step before we directly, physically integrate these digital helpers into our own flesh–a frightening scenario which the "body horror" movies of Canadian film-maker David Cronenberg has conceptualized in both *Videodrome* [17] and *eXistenZ*.[18]

More profoundly, George Orwell's *1984* highlighted the power of manipulated information and the fear of omnipresent surveillance through regime-drones collecting data about individuals in his still very relevant dystopian work.[19] Popular culture thus abounds with images and narratives which we may adduce to orient ourselves to a world where ICTs play a large role and where we live much of our lives in, or at least influenced by, an infosphere. The important question is whether–especially regarding military leadership–we can trust these images and narratives. And if we cannot trust them, we had better be able to pin down the facts that matter.

It is hard, given the present state of research, to clearly conceptualize what is the infosphere.[20] But still, it is clear enough that ICTs provide a highly interconnected, quickly changing context encompassing both physical and virtual aspects. In this respect, popular images and narratives get things right. It is equally clear that ignoring the specificities of that context and forgoing any influence or attempt to shape the ecology of the infosphere quickly results in a situation where one is just conditioned by the infosphere without opportunities to exert any notable control over it. This is a bleak prospect that popular culture might also have gotten right. This second observation in particular is highly relevant for any form of leadership that employs ICTs to record, process and transmit information; *tout court*, it is highly relevant for any form of leadership in developed societies.

What does all of this come to if we focus on military issues and security issues in particular? What does popular culture provide us with in these respects? In *Minority Report,*[21] computers regulate the complete environment and produce personalized advertising similar to what we already get from the infosphere. The most interesting aspect of the story is the concept of predicting crime and of possible intervention before the crime actually happens. This is a very real aspect of how contemporary ICTs are employed, with preemptive drone strikes against potential terrorists while crime is in progress, probably always presupposing that certain things are not avoidable. The movie outsources the precognitive element in the realm of metaphysics, with drugged human mediums predicting the crime through precognition. It is significant that despite all realism and foresight, the idea of things that are destined to happen simply by how humans behave invokes the problem of misinterpreting the output of algorithms build on certain behavioural patterns. Consequently the movie leaves destiny and fate outside of technological realms. Based on a short story by Philipp K. Dick, the movie is in the tradition of *Total Recall* [22] or *Blade Runner*[23], which are also based on Dick's stories and feature the idea of artificial intelligent androids and virtual memories in the

sense of manipulated data emplaced directly in the mind. The point here is that when we talk about security policies and ICTs, the reliability of prediction by ICTs and data manipulation claim center stage and it is a challenge for leaders in these fields to grapple with these issues.

What is the upshot of all this? The immediate point is that leaders must consciously influence and shape the infosphere as far as their role and position allows. If they ignore the new situation and fail to exert influence, they risk, at some foreseeable point, not being able to really lead anymore, because decisions might be so constrained by the infosphere that their leadership is restricted to only a few options and, in a worst case, their leadership is not much more than a dry leaf floating in the digital wind of automated information processing. Ultimately, we are discussing how leaders can retain control despite the risk that information technologies reduce leaders' control over decision-making.

In military movies, a good analogy to an infosphere would be the control room, where military and political leaders make fateful decisions in a protected space while relying on abstract information from an outside source, often transmitted through or even provided by an ICT.[24] The world caught a glimpse of a real control room during the killing of Osama Bin Laden by U.S. President Barack Obama's administration, with the famous picture of the President and his advisors staring paralyzed at the progress of the mission, in a safe environment and surrounded by various ICTs. The only immediate risk in such a control room is receiving wrong information which might lead to false interpretation and flawed decision-making. The narrative is well-known. In *Patriot Games,*[25] the CIA is dealing with an IRA terrorist group which is exercising in a training camp in Libya. Since there are dozens of these camps in the desert and due to the limits of ICTs employed, the satellite pictures from above only give partial information about the target; the pictures on which decision-making depend are blurred. They have to rely on human informants to identify the terrorists and learn that one of the terrorists is a woman. But still, there is uncertainty, because it is possible that other women are also in the camps. The officer in charges finally says, "tell me one thing that is certain in life" and orders the strike against the camp without being completely sure whether it is the right target. Thus, it is with the possibility of remote and targeted killing that ICTs in a control room, and possibly the concept of an infosphere, become especially relevant to better understand military leaders' decision-making, its prospects and limits.

In recent years, various movies about futuristic cyberwarfare or full-blown cyber terrorism have emerged, but few movies have dealt with the issue of

remote killing steered from safe control rooms. This is interesting, since extravagant cyberwar scenarios with every digital device infected and manipulated as depicted in movies like *Die Hard 4.0* [26] are far less realistic than the everyday killing of terrorists by drones. The movie *Good Kill* [27] deals with the decision-making problems of "joystick soldiers" who operate drones and also addresses the issue of preemptive killings to avoid a crime in progress. In 2015, a drone movie from the UK called *Eye in the Sky*[28], addressed the problem of how to interpret the output of ICTs, reevaluate parameters and finally decide whose lives may be risked and whose may not. Like older movies such as *Crimson Tide* [29]or *The Hunt for Red October,*[30] these movies are more concerned with moral and ethical questions which arise from obviously wrong data and not with the verification process or reevaluation of questionable information provided by stubborn superiors relying on strict procedures and ignoring opinions–very much like many ICTs. And precisely because of such images, narratives and real-life analogies, one may want to argue that ICTs with sophisticated machine learning capabilities are indeed necessary since there will always be the risk of narrow-minded leaders–probably relying on ICTs which are not so sophisticated–whose decision-making capabilities are not up to the task.

In military leadership, of course, the insight that information plays a crucial role is not at all new and military leaders have always realized that information quality often makes all the difference. The observation that it can be crucial for a military leader to know why an information source, such as a military advisor, provides the information he or she provides might sometimes appear well worn, but the appearance is misleading. It is because of this importance that even the earliest accounts of military history mention this idea. For example, in Herodotus' *Histories*, Mardonius, advisor to King Xerxes I, is portrayed as an evil advisor who suggests an invasion of Greece for purely self-interested reasons which he never discloses.[31] Of course, we can easily transpose this figure and imagine mardonian ICTs which process and maybe record information in ways and based on standards that the military leader they transmit the information to would not approve. Truly mardonian ICTs, just like Herodotus' Mardonius, do not disclose what made them transmit the information they transmitted and that is what sometimes makes them particularly dangerous for military leaders.

The problem of mardonian advisors is a perennial issue for military leadership and in this chapter we shall argue that, for practical purposes, ICTs only pose a threat for military leaders insofar as they can be mardonian advisors and, at the end of the day, they should be treated as such. From that

perspective, the infosphere with all its novelties, upgrades, innovations, and occasional stutters, stammers, and kludges, does not pose special problems for military leaders that were not already known regarding the more primitive infosphere constituted by reliable and mardonian advisors and informants upon which any military leader depends. With ICTs playing an important role in contemporary military practices, the pace and complexity might be different, but there is no new category of military leadership challenges.

## MILITARY LEADERSHIP, INFOSPHERES AND THE MYTH OF GREAT MEN

Given the way we introduced ICTs, the notion of the infosphere and how it influences (and can be influenced by) military leaders, one might wonder why the topic is so hot in leadership studies and elsewhere, including public discussions. So, whence the idea that military leadership should beware of ICTs? One good starting point is, again, popular culture, especially the narratives it provides through various media. We shall look at traditional visual and literary narratives taking up the issue of leadership and ICTs.[32]

As we have already suggested, the specific ways that military leadership is affected by ICTs are mostly related to remote killing and automated weapons. In public and even some professional debates on remote killing and automated weapons, one often finds it problematic that decision-making either heavily relies on or is even substituted by technological means. As far as leadership is concerned, one should nevertheless ask how much and which sort of decision-making in military matters can and should be delegated to ICTs, especially those with sophisticated machine learning capacities.

There is, however, also an emotional element at play here. Influenced by popular culture, the capabilities of ICTs can evoke fears. Inspired by narratives from the *Terminator*[33] and *The Matrix*[34] films, the prospect of ICTs becoming independent and attacking or exploiting humans becomes readily associated with the sort of ICTs available or under consideration for military employment. Such narratives also prompt a different leadership topic: a Great Man, or heroic leader, usually figures in such narratives to prove that human decision-making does have military advantages over automated decision-making. These narratives suggest that great military leaders make decisions in ways that machines cannot.

The concept of a heroic leader is very prominent in movies of outlawed artificial intelligence or machine rule where intelligent and malicious machines

turn against their human creators. In *Terminator*, the machines under the control of Skynet, an intelligent defense system, start a war against mankind. While humanity is conducting fierce resistance in a grim future, the machines are using time-travel technology to send a "terminator" back in time to kill young John Connor, the future leader of the human resistance. But the machines fail to consider possible paradoxes of time-travel; by changing the past, they actually create their own doom, because the human resistance sent a soldier back as well who ultimately becomes the father of John Connor, as he meets and falls in love with Connor's mother-to-be.[35] The terminators themselves are robots that follow a simple program to exterminate humans, but can be re-programmed and "hacked" for good purposes such as protecting humans and serving the resistance fighters as depicted in later installments of the franchise. While a terminator cannot think like a human, it can take into consideration how humans think. The whole franchise is about man triumphing over machines by using human traits like compassion or responsibility.

In a related way, the *Matrix* series is about machines threatening mankind, where intelligent and self-aware machines use humans as a power source and reduce them to a status of living batteries. As in *Terminator*, a "chosen one", a great human leader with almost Messiah-like qualities called Neo is destined to save mankind and destroy the evil machines.[36] This savior-like figure is also very prominent in *Robocop* by Paul Verhoeven:[37] in a near future, the crime rate in Detroit, Michigan, has risen so much that police forces are not willing to accept more human casualties and, thus, the OCP corporation develops a clumsy robot which is programmed to eliminate criminals. But the model's program is flawed and the first test ends in a disaster when the robot does not recognize that a voluntary participant has already surrendered in a fictional arrest scenario, and kills him instantly. As an alternative, Robocop is a cyborg, based on a human police agent whose body, but not his brain, has been replaced with robotic parts. The movie follows Robocop, who increasingly realizes that he had a human life before, as he experiences suffering like Jesus on his *via dolorosa*[38] and ultimately triumphs over his mindless robot counterpart. The concept of an augmented human being in symbiosis with sophisticated technology is very prominent in this movie. The limits of a mindless robot that substitutes for a larger-than-life human character with emotions is the principal message of this narrative.

Such narratives presuppose what in leadership theory is commonly known as the "Great Man" theories–accounts of leadership focusing on the innate traits of great social, political and military leaders.[39] In leadership studies,

such trait approaches have been criticized since the mid-20th century and, despite their intuitive appeal and century of research, have never been able possible to identify a definitive list of traits which make a great leader. According to Stogdill, another weakness of a pure trait approach is that it neglects the import of situational factors.[40] But of course, a leader who outsmarts ICTs on the silver screen is expected to do so because of his or her greatness and not because of sheer luck. Together with the intuitive appeal of trait theories, such expectations often influence what narratives popular culture produces. It is, therefore, not a surprise that popular culture often provides narratives in accord with trait theories of leaders, no matter whether military topics and automated decision-making are considered. But because trait theories are limited, the extent to which such images and narratives are useful as guidelines for rational discussions about ICTs and decision-making military leadership is also limited.

All this suggests that we should scrutinize whether there are particular human traits which help us find differences between human and automated decision-making. Once we understand more clearly how leaders' decision-making can be complemented with or even substituted by ICTs, we shall be able to explain more clearly to what extent leaders can trust ICTs and where and how they should seek to retain control. The goal is to have a clear picture of when ICTs might become mardonian advisors and to provide some practical guidelines for how military leaders can deal with this problem.

## HUMAN DECISION-MAKING VERSUS AUTOMATED DECISION-MAKING

From the perspective of ICTs, what we call decision-making is simply a computation. If we have a clear understanding what ICTs can as a matter of principle compute, we also understand the formal boundaries of their decision-making capabilities. Fortunately, it is not very complicated to understand the basic ideas of computability and how they compare to human decision-making capabilities.

The notion of computability we utilize here is an idealized notion. Computations in the real world always have practical limitations such as time, hardware speed and storage space. However, there are functions that are not computable even if such practical limitations could be overcome. Thus, for the purposes of this chapter, we shall only consider formal (i.e., non-practical) limitations on the sort of computability essential for our ICTs. But what sort of computations form the heart of our ICTs? The answer is that all ICTs are

limited to what is Turing-computable (i.e., what a Turing-machine can compute). Hence, ICTs' capabilities to complement or even substitute for human decision-making is also limited to what is Turing-computable. But what exactly does Turing-computability mean?

The best way to explain Turing-computability is to consider an image. Imagine a tape marked into squares (similar to a strip of movie film), which can be moved a square to the left or to the right, and on which a head can print or erase strokes (one per square). Carrying out computations thus comes basically down to five things:

1) Erase: the head makes the square below it blank, no matter what was on that square before.
2) Print: the head writes a stroke on the square below it, no matter what was on that square before.
3) Move the tape one square to the right.
4) Move the tape one square to the left.
5) Halt the computation.

A computer program is, on that most fundamental level, nothing more than a list of instructions in conditional form, telling the hardware which of the five actions it has to carry out depending on whether there is a stroke on the square below the head or not. So, the hardware looks up the first item on the list of instructions, scans the square on the tape below the head and, depending on what the first instruction is, carries out one of the five actions before going to the next item on the list and carries out that new instruction.[41]

Human decision-making, as a process, can only be emulated by ICTs insofar as it can be broken down into discrete units of Turing-computable steps. If there are elements in human decision-making, especially the sort of decision-making in which military leaders are expert, that cannot be broken down along these lines, then we have found something that even the best ICTs will never be able to incorporate into their decision-making, no matter what popular culture suggests.

This is exactly the starting point for John Searle's Chinese Room Argument.[42] Searle argues that Turing-computable programs cannot create artificial intentionality, an important property of human and animal minds. The upshot of this is, of course, those steps of a leader's decision-making process which require intentionality cannot be emulated by ICTs and, hence, require a

human's wits. Searle begins his argument with a thought experiment, which we adapt to fit the present topic. Imagine Searle sits in a locked room and is given a large batch of Chinese symbols (which he does not understand) together with a set of rules which specifies which symbols he has to return when given certain other symbols. To simplify things, we might call the Chinese symbols Searle is given "problems," the set of rules a "decision-making program," and the symbols he hands back "solutions." After some time, Searle gets very good at following the rules and the rule-book gets updated very often to make it flawless. And at that point, what Searle does in his room, the solutions he produces, becomes indistinguishable from what a native Chinese speaker, following a reliable military decision-making procedure, would produce. Yet Searle does not understand a word of Chinese.

The point of the Chinese room is that Searle does not understand what he is doing. He neither understands the problems, nor the solutions, nor is he aware that what he is doing could be described as a decision-making procedure. Searle, manipulating symbols in a room, does nothing more than what a Turing-machine does: follow instructions. Even if there were rules for rewriting the set of rules (an analogy to machine learning), tools Searle could use to work faster (an analogy to better hardware), or rules for identifying and extracting new rules from a large corpora of Chinese writing (an analogy to Big Data), Searle would still lack something the native Chinese speaker has: an understanding of any problem, solution or awareness that a decision is begin made.

The point of Searle's Chinese Room Argument as adapted to our topic is to say that an ICT can never make decisions in the same way as a human leader, because no ICT can understand the problems, solutions or become aware that it is actually making decisions. This has direct consequences for leadership practice: in decision-making, ICTs cannot do what human leaders do. Furthermore, it is hard to see how ICTs can help identify problems, solutions or what should count as a decision-making process. Of course, they may help us sharpen certain problems, solutions or processes by supplying more information or by making certain calculations that exceed our capacities, but human wits will have to lead the way.

Searle's argument is controversial and there is still no consensus as to whether it succeeds at making clear that artificial intelligence cannot understand language or be conscious of something.[43] For present purposes, however, our adapted Chinese Room Argument should suffice to show that identifying what counts as a problem, a solution or a decision-making process cannot be based solely on the sort of symbolic manipulation that we find in

Turing-machines. Obviously, a well-trained leader has no problems identifying problems, coming up with possible solutions and deciding on which one to pick. The practical question is: how can ICTs support or hinder leaders?

A good way to approach this practical question which cannot be fully answered here is to ask why ICTs are a candidate for assisting or hindering decision-making. According to some influential voices in the cognitive sciences, there is a core property that Turing-machines and distinctively human cognitive processes share: recursion.[44] Recursion refers to formal processes which take their own output as an input, thereby creating a loop. Regarding human language, recursion helps us explain the creativity and systematicity of speech (and, arguably, thought). It is also due to recursion that ICTs can become independent information-sources which gather and transmit new information based on the output of its own processes.

As far as they are used as information-sources, the risks of using ICTs in leaders' decision-making depend on how reliable the quality of their output is. Again, that is not a new point and leaders had this problem with all sorts of information-sources well before the digital area. However, things get trickier if we look at ICTs that, due to recursive capabilities, are involved in the decision-making process and manipulate information independently on a leader's behalf. If our point about recursion is right, ICTs can do some tasks that humans can do, and often better and faster. But, and here we are indebted to Searle, we should doubt that they actually can *identify* problems, solutions or decision-making processes on a leader's behalf.

These results actually help us to sharpen the concept of mardonian ICTs, which process and possibly record information in ways that the leader on the receiving end would not approve. Due to recursion, it may be that a leader does not know by which standards a piece of information has been manipulated, especially if the ICT in question is an independent information-source, capable of changing how it gathers new information. In that respect, ICTs can become very similar to human advisors, whose intentions and motivations are sometimes hidden und unclear. Unlike Mardonius or any other advisor pursuing self-regarding goals, there is a categorical worry about ICTs' reliability in identifying problems, solutions and decision-making processes. Human mardonian advisors are usually quite good at identifying problems, solutions and decision-making processes, but they also clearly distinguish between those that concern themselves and those they pretend to pursue in order to influence the leaders they advise. There is thus a sort of wickedness in human advisors that we should not expect to find in ICTs, even if some works of popular culture suggest otherwise.

All of this is, of course, relevant to any leader working in a domain where ICTs play a role. But are there specific lessons that we can infer for military leadership? In a military context, especially when planning or when operating remote or automated weapons, the problem with ICTs is that the information a military leader has for making a decision usually comes from one source only, manipulated by just one sort of algorithm. It is therefore often convenient for leaders to go with what that one manipulated source provides. This is risky. For critical decisions in military matters, leaders should probably minimize risk by adducing a second source (whose decision may have been manipulated by a different algorithm) so as not to completely depend on the deliverances of one source, especially when risk and uncertainty are high. Even if mardonian ICTs lack all the negative properties of their human counterparts, their mistakes may not be less grave than a human advisor's. In fact, they might be worse, because ICTs enhance to a much greater extent what military leaders can do.

At any rate, and despite the fact that there are differences between ICTs and human advisors, military leadership can and should treat ICTs in decision-making as it had always treated military advisers before such systems were available: allow your advisors to help you, but make your own decisions, and if you can afford a second advisor who has a different point of view, hear him or her as well. Those who have command responsibility should really be in charge. Most great military leaders would never have allowed their advisors to control what counts as a problem, a good decision-making process, or a solution anyway. In our time, it is just as important not to think that ICTs can relieve leaders of this burden.

## ENDNOTES

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29. *Crimson Tide.* Directed by Tony Scott. USA, 1995.
30. *The Hunt for Red October.* Directed by John McTiernan. USA, 1990.
31. Herodotus, *The Histories* (Cambridge: HUP, 1920), 7.5-7.6.
32. There might be good reasons to also consider the narratives in computer games, as they influence an entire generation of soldiers and future military leaders in the highest ranks. But, as far as we can see, there is at the moment not much difference between the relevant narratives we find in films and those we find in games.

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# CHAPTER 10

# SOCIAL CULTURAL FACTORS IN MILITARY DECISION-MAKING: BUILDING A FRAMEWORK FOR THE OPERATIONAL COMMANDER IN THE OPENING PHASES OF AN OPERATION

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## INTRODUCTION

The current century has seen North Atlantic Treaty Organization (NATO) forces deployed on operations that differ considerably from the conventional conflicts that characterized the last century. From Mali, to the Congo, to the Middle East, NATO has been engaged in operations that seem broadly similar to what Schultze[1] described as low-intensity conflicts. Tropp[2] notes such conflicts are essentially between groups rather than nations, and often based on ethnic, religious and racial differences. Yet these intergroup conflicts, whether one characterizes them as peacekeeping missions, peacemaking missions, stabilization operations, or a low-level insurgency, infer a deeper insight into local communities and tensions beyond what is normally called for in conventional war.

The importance of understanding the community dynamics that underpin intergroup conflict is not new. For example, the U.S. Army Capstone Concept[3] identified that present doctrine did not address well the "moral, cognitive, social, and physical aspects" of conflict; a gap that led to the development of a human elements draft framework that was created by an academic working group.[4] Likewise, Canadian experiences in Afghanistan reflected on the need to better understand and measure the social cultural aspects of the wider intelligence preparation of the battlefield (IPB) process.[5]

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the Canadian Armed Forces or the U.S. Army Research Laboratory.

In this chapter, we focus on the operational level and more specifically in the challenges of the early weeks and months of a new military campaign. We suggest this is when uncertainty and confusion are most pronounced and resources stretched to their outmost, and, consequently, when the requirement to understand two questions is most salient: *what* information about the community needs to be collected to inform planning and decision making, and *how* can this information be fused into existing processes used by military planners and leaders.

## PROBLEM DEFINITION

If we accept the premise that understanding the complexity of communities matters to operations, particularly in the opening blows of a new campaign, then what of technology? What role can technology play in helping to gather the correct information and effectively fuse community insights into operational planning to inform planners and leaders?

The solution we suggest is not a single technological or computational tool. Operational planning and decision-making is at its heart a team sport; a process that is centered on human interpretation and insight. It is, for those who have witnessed an operational level formation in action, a shifting balance between a fine-tuned machine and a chaotic jumble. People and systems all struggling and interacting through the fog of war under intense time and resource limitations to enable commanders to make profoundly uncertain yet impactful decisions.

We submit that while individual technological systems have value in specific staff processes, the nature of operational level military work is too complex for any unitary technology. Rather, we propose a fused approach that uses technology to help humans collect, process and analyze the rich narrative data needed to understand multi-group communities, within the demands of time and space imposed at the operational level. Drawing from past lessons and limitations of both computational and social science methods, we will outline a road map for the development of an integrated human-computational system that fits within normal operational level planning processes, and strives to meet the litmus test of enabling humans to produce community level intelligence and insights that are timely, reliable and sufficiently valid to inform the ruthless timelines and demands of operational level planning and activities.

# COMPONENTS OF A FUSED APPROACH TO COMMUNITY ANALYSIS

Approaches to analyzing communities can be broadly and somewhat crudely divided into two camps, each with distinct advantages and limitations in the operational environment: computational approaches, which often rely on metadata drawn from sources such as social media; and human-centric approaches which draw on the field work traditions of the different social sciences.

Field work in its various forms draws on a wide range of methods to produce rich contextual data and insights into intergroup complexities. Such insights can help leaders and planners understand why certain events are occurring, or are likely to occur. Yet this often qualitative data, whether one considers interviews, focus groups, or various forms of participant observation, have considerable limitations from an operational perspective. Qualitative methods are time consuming and require a specific and highly technical skill. To some extent the skill and effort that goes into qualitative data collection during operations can be compared to the work performed in human intelligence. This is not a perfect analogy, and we would suggest that human intelligence is the more complex of the two. But broadly speaking, the basic constraints of human intelligence activities such as time, access, limited flexibility to rapidly shift the focus of analysis, and the need to possess a specialized and limited skill, apply equally to qualitative data collection in operational environments.

Conversely, computational approaches, broadly defined to include all forms of metadata or mass data collection gathered electronically, offer unparalleled assessment of trends and shifts in behaviours. Data derived from sources such as social media are ever present and self-generating. These data can be analyzed effectively using the wide range of computational systems available without the inherent risk and chaos associated with field work. Likewise analysis of these existing and available data sets can be tailored to meet timelines and is much more responsive to the shifting demands of planners and leaders. Yet metadata is inherently a pale shadow of the complexities of human behaviour. The nuances of group behaviour, who we interact with, how we react to others verbally and nonverbally, how group norms and relationships shape and limit our interactions and behaviour are layers of complexity that are simply not captured in metadata, unless one is analyzing the social media of a group of cultural anthropologists.

With these limitations and strengths of computational versus human field work in mind, we can elaborate on what a fused technological approach needs to provide to an operational formation. First, it must provide a framework that identifies *what* information about the community needs to be collected within the limitations of operational work. Second, the approach requires a platform of processes and computational tools that allow the development of the visualization and analytical products that feed the operational planning and decision-making systems.

- **Field Collection Framework**. A method and theoretical framework that is developed specifically to meet likely operational requirements and to efficiently "feed" operational analysis and decision making. Data collection is human led, but driven by the demands and requirements of the analytical and computational component.
- **Analytical and Computational Platform**. A platform of visualization and analytical technology that is designed to allow qualitative forms of data to be incorporated, analyzed, evaluated, and presented alongside other data forms in the operational planning and decision-making processes.

## FIELD COLLECTION FRAMEWORK

Our proposed roadmap for this approach identified three pragmatic objectives for the field collection framework that we will consider in turn:

- Data collection must be linked to specific information requirements identified by the analytical and computational component of this approach.
- Costs and limitations of data collection in operational environments must be factored into the methods and approaches used within the field collection framework.
- The framework must be capable of providing the data for analysis of different forms and types of conflicts.

Remembering that data collection is not a stand-alone component, but guided and driven by the computational and analytical component of our model, we suggest that data collection linked to specific information requirements has value in two aspects. First, it ensures that only the rich data needed by the computational or analytical tools are at play. This focus is needed since data collection in conflict zones consumes resources, not simply opportunity

costs but monies, soldiers' time, and ultimately lives. For example, between May 2008 and January 2009, three social scientists employed by the U.S Department of Defense were killed while deployed on operations.[6] Given the high cost of information gathering, it is incumbent upon us to suggest a framework that hews to the actual information needs of military planners while ensuring that the data are reliable, valid, and capable of being fused by our computational and analytical tools. Second, linking and limiting data collection demands to specific information requirements helps to address the practical limitations of a data collection asset that takes time to spool up for collection, is inherently limited in its ability to shift collection goals, and is quite fragile.

The second and third objectives of the framework are essentially questions of methods and theory: *which* methods will be developed, trained and employed to collect community data, and *what* theoretical perspective will inform the view and analysis of conflicts.

## DEVELOPING A THEORETICAL FRAMEWORK

Intergroup conflict is complex with a wide ranging and diverse literature base. Theories vary in their perceptions of the nature of society and conflict, and units of analysis. At the individual level, psychological theories such as integrated threat theory,[7] social identity theory,[8] Realistic Group Conflict Theory,[9] and Terror Management Theory[10] offer insights into how individuals see and perceive the actions of others. Conversely at the community or societal level, researchers have examined intergroup conflict through examining cultural values,[11] motivations,[12] assessments of risks,[13] and even as broad historical case studies.[14] Augmenting the theoretical work, smaller literatures look at specific elements of intergroup conflict such as the impact of political power vacuums on ethnic conflict,[15] the role of institutions,[16] the role of media,[17] political intolerance,[18] the length of the conflict,[19] or even interpersonal aspects such as trust.[20]

This broad range of intergroup theories and perspectives seem to view conflict as stemming from some combination of three elements: (1) *Realistic factors*, such as economic or political competition; (2) *Group Identity*, such as a fight over values, identity, and the survival of one's group; and (3) the role of *Political Elites* in mobilizing and directing violence within their communities. If some theories, such as social identity theory or realistic group conflict theory focus more on one element over another, other approaches have argued that conflict is multi-layered and that understanding a conflict

requires insight into all three.[21] Our approach agrees with this multi-layered perspective and proposes a framework that will consider the importance of realistic factors, group identities, and the role of elites, in understanding an intergroup conflict.

It is beyond the scope of this chapter to delve into intergroup conflict research across the various disciplines. Rather, we will attempt to briefly outline the core theories and perspectives that inform each of the three elements that, in combination, will allow for a robust and flexible approach to gathering community data.

## *REALISTIC FACTORS*

Theories as diverse as Realistic Conflict Theory, Mitchel's Conflict Theory,[22] and Stewart's Horizontal Inequities Theory (HI)[23] all suggest that concrete factors such as economic inequalities or access to resources can underpin conflict. Supporting this theoretical work are a range of ethnographies and analyses of conflicts that note the import of practical inequities.[24,25,26] Even theories that focus more on other aspects of conflict such as Social Identity Theory (SIT) acknowledge the role that realistic factors play in underpinning conflict.

Theories that focus on realistic elements generally seem to view intergroup conflict as arising from direct competition or perceived threat.[27] Two well-known theories worth considering within this perspective are Integrated Threat Theory (ITT) and Realistic Group Conflict Theory (RGCT).[28] Both theories focus on the practical and concrete causes of intergroup tension; conflict over limited resources, values, or ideas; and each addresses issues of direct conflict and its impact on intergroup tensions, behaviours, and ultimately conflict. Though both theories deal with practical threats, ITT expands RGCT somewhat and suggests that direct conflicts can be caused by perceived threats as well as actual ones. That is, a group can feel threatened over an actual threat, a perceived threat, a negative stereotype which suggests other groups are dangerous, or even general anxiety about how other groups behave. It is the perception of threat that contributes to negative out-group attitudes in diverse situations.[29] For our purposes, ITT appears to offer more flexibility than RGCT, since it offers a wider scope by which to consider how threats may be driving conflict.

From a practical perspective, understanding how groups in the community perceive each other, and what forms of threats they believe or fear are present, will reasonably inform interactions between an operational commander

and community groups. More specifically, the selection of key leader engagements, influence activities, and messaging from leaders, would benefit from a basic understanding of how a group in the conflicted area feels threated, who they feel is threatening them, and how they fear or believe this threat will materialize.

Even if ITT and the focus on realistic threats offers military planners insight into who is threatening whom, that perception of threat is not necessarily the actual underpinning factor driving the conflict. To provide a second element of understanding to the realistic element, we need to gain insight into the structural factors that underpin the community dynamics and intergroup relationships. To do this we considered Stewart's Horizontal Inequalities Theory, which takes a broader view by suggesting modern conflicts have a foundation in structural inequities between groups.[30] These inequities in turn drive political elites to mobilize the community based on a specific group identity. The HI model argues that while a conflict may be cast by the political elites, almost camouflaged in terms of an ethnic or religious conflict, the root cause and driver is the specific structural inequities which codify imbalances and grievances between groups in the society.

The heart of the HI model is consistent with Mitchell's typology[31]in that group inequalities or incompatibility begin the conflict. Taking a strong realistic perspective in line with other conflict theories from Marx to Tajfel and Turner, Stewart seems to agree with Cohen[32] that people may argue over cultural differences, but they fight over power. It is the organization by political elites that shifts the nature of the conflict from individual disobedience or interpersonal conflict towards a conflict that pits groups divided along cultural, ethnic, geographic or political boundaries.

The HI model has an interesting analytical history, with case studies examining the role of different forms of inequities in conflicts such as in Ghana, Cote d'Ivoire, and Nigeria.[33] From a military analytical perspective, the HI model offers our framework two advantages. First, its recognition that the causes of conflict vary; the specific inequality that exists in one location may not exist in another.[34] Second, the importance of understanding why people or elites *say* they are fighting may not be the drivers that underpin the conflict. Understanding the structural inequities that fuel a conflict, and not its camouflage, offers operational commanders a much deeper ability to have an impact on the drivers of conflict and violence.

Overall HI and ITT are starting points that underpin how we will consider the importance and role of realistic factors in conflicts. Understanding

realistic conflicts, perceptions of threat, and underlying societal inequalities provides a foundation of insight to guide a commander's decision making. Yet if realistic factors such as power, wealth, or resources often underpin conflict, few conflicts seem to be publically fought along such lines. To understand how groups define and view the conflict themselves, we need to add the element of identity to our framework.

## *GROUP IDENTITY*

If realistic factors of conflicts seem easily understood, with conflict for economic or political gain being well embedded in the historical record,[35]the role of group identity may be said to have a slightly more recent history.

The most widely considered theory of identity and its role in group conflict is likely SIT.[36] This theory provides a framework for understanding the individual drives that underpin the formation and maintenance of group identity. Drawing from a series of experiments that showed group formation and intra-group favoritism in the most minimalist settings,[37] SIT argues that group formation is unavoidable: cognitive processes lead us to divide our world into "relational and comparative"[38] categories. These categories are relational in the sense that they define the individual as similar to or different from others; they are comparative in that groups define themselves as better or worse off than others.

Arguing that the world is divided into groups that see each other in these relational and comparative ways, SIT argues that groups are driven to maintain self-esteem by ensuring positive distinctiveness between their groups and others, in effect placing those attributes associated with their own categories as being of higher value than those associated with others groups. Though other authors have argued about which psychological drive is at play,[39] the core idea behind SIT and its derivatives is that we are hardwired to cast our own group membership in a more positive light. From an intergroup conflict perspective the theory argues that it is the need to defend perceptions of group superiority, or address perceptions of group inferiority, that drives group cohesion and intergroup conflict.

At the operational level, understanding social identities appears to offer two advantages to decision makers. First, understanding the importance of social identities, how strongly people identity with their groups and perceive their self-worth as being defined in the success of that group, provides a deeper insight into how people themselves view the conflict. Economic

inequalities may matter, but if, for example, a group feels that their identity as Islamic pastoralists is being threatened by the central government through a modernization program, then their responses cannot be well understood or addressed in simply economic terms. Second, understanding how group identity is manifested in the physical, social and economic domains, seems to us foundational to the development of visualization and analytical products to inform decision making. We might call this an understanding of human geography, referring to how groups are distributed and interact across the physical, economic and political domains, with clear implications for operational planning.

Yet a focus on identity and physical geography tells us little about how boundaries between groups are monitored, policed, and manipulated. In more concrete terms, understanding whether a neighborhood is Sunni or Christian is useful for an operational commander. However, being able to predict how those neighborhoods interact requires insight into where those two groups mingle and rub up against each other in daily life; it requires us to understand the human geography of groups and boundaries plus deeper insight into the spoken and unspoken rules that define and guide intergroup behaviour and conflict.

Boundaries between groups, whether those boundaries are physical, social, economic, or cultural, provide operational planners with the trigger lines and warning signals of conflict and violence. Though understanding a boundary exists, and knowing when it has been violated, does not allow one to easily predict what will happen, but it does allow one to understand that something will happen. For example, consider the predictable consequences of a Catholic transgressing into certain neighborhoods in Belfast, or a casual biker wearing an unearned Hells Angel patch. Predicting the specific reaction might be difficult, but predicting that there will *be* a reaction is not. Understanding these rules and boundaries provides operational commanders with the "rulebook" that guides intergroup relationships. In turn, this allows them to consider when to break or not break those social rules.

The boundaries and divides between social groups are not static. They can be actively hardened and used to mobilize violence. To understand how political elites or leaders do this, and to draw out insight into how operational commanders can detect this process, we turn to our last element, the role of elites.

## ELITES

A range of ethnographies and analyses of conflicts[40] have argued that group identities, be they religious, ethnic or political, are mobilized and shaped by political elites for political or economic gain.

The core assumption behind elite theories of conflict is that war is functional and conducted in the pursuit of pragmatic rewards.[41] Group violence does not arise from spontaneous events but, as Demmers[42] notes, is organized. Ethnic or group identities may exist prior to the conflict, but it is the mobilization of that identity by elites that reify the identity and set the conditions for violence. Overall the role of political elites in mobilizing large movements and organized conflict is easy to see–from Jewish pogrom's during the middle ages in Germany and France,[43] to the genocide in Rwanda–the practicality of mobilizing large groups of people with weapons and targeted violence over months or years demands a certain level of organization. Though our reading of the literature suggests that intergroup conflict is complex and multifaceted, it is difficult to think of an intergroup conflict where political elites played no role in group mobilizing and violence.

The act of mobilizing a group towards violence appears to draw from the group's myths and legends (e.g., the former Yugoslavia,[44] Rwanda). From an operational perspective, understanding the cultural tools that a political elite can use to mobilize a community for conflict offers insight into how the local elite are, or may begin, mobilizing their communities for conflict. Understanding what actions messaging for group mobilization will invoke, combined with understanding the role of local media, educators and religious leaders, can offer an operational commander forewarning of attempts to escalate or inflame a conflict, as well as specific targets in the community to attempt to counter such efforts.

These three elements in combination provide the range of areas and methods that the field data collection framework must be capable of addressing. However, the data requirements for any specific operation will be driven by the needs of the specific mission or phase of the campaign. For example, in an early stage of the campaign, data collection may focus on mapping out the human geography so that commanders understand which group controls specific terrain, or identifying how elites are mobilizing group identity in order to begin targeting and reducing the elite's mechanisms of influence. But as a campaign unfolds, data collection might shift to focusing on the rulebook of intergroup boundaries for the development of models of behaviour.

Overall a focus on these three elements of intergroup conflict provides a starting point for the deployment of the tools and methods of personnel tasked to collect community data. This is the starting point for addressing questions of training, skill development and force structure. If a data collection team can collect, using a range of methodologies, answers to the following six broad forms of questions, then we suggest they are likely to be able to provide reasonable and sufficient data to inform operational planning of the intergroup complexities:

- What forms of threat do the different communities feel from other elements in the community, and what form do the threats take (i.e., practical, symbolic or based in stereotypes or general anxiety)?
- What are the major horizontal inequities that divide the community and how are these inequalities manifested in community institutions such as the educational or economic system?
- What are the main political, cultural, religious or social groups that contribute to the social identity in the community? How do group identities shape where people live, work and play?
- To what degree do the different communities live, work and share space and relations in their daily lives? Where in the personnel, economic and social worlds do the groups connect or cross group boundaries and what are the normal rules of interaction?
- What are the myths and stories of each group being portrayed in education, culture practices, media and stories?
- Who has the power to mobilize the group by invoking the history and myths of the community? How are educators, religious leaders and the media communicating the myths and history of the people?

Yet understanding what socio-cultural or community data is needed to inform operational planning is one component. Developing a technological framework to collect, analyze, and utilise those community data is critical, and the second component of our framework.

## ANALYTICAL AND COMPUTATIONAL PLATFORM

The second half of our framework is an analytical platform that allows for the analysis and fusion of qualitative and mixed data forms into the operational planning process. Field data collection is valuable, but only if guided by

technological systems and processes that drive the right data to be collected at the right time and for the right planning process.

The analytical platform we propose has three distinct elements:

- A computational platform that allows the analysis of mixed data forms and is capable of exporting data for development of intelligence and staff products.
- An analytical toolbox that provides analysts with the tools and training required to understand, interpret and analyse field data.
- An information management system that allows for all field data to be organized and maintained to support ongoing analysis and ensure that the data can be leveraged to support longer term, deeper modelling and broader analyses.

The technical component of our approach is a fusion of technology, process and training that in isolation would be insufficient, but if provided in combination would provide the mechanism for management of the collection, analysis, and presentation of rich socio-cultural data.

The computational element allows analysts to perform the normal range of qualitative and quantitative statistical analysis, while also ensuring that data can be shared across classified systems. If the computational platform provides the foundation, it is the toolbox that allows analysts to effectively direct field data collection activities while ensuring that collected data are fused within operational and decision-making processes. The toolbox is a training package that helps analysts translate information requirements into the level of specific detail needed to collect community data, while also providing the technical skills to perform a wide range of data analysis and interpretation of mixed data. Lastly, the information management system provides the guidelines and structures to allow the collection and management of a wide range of field data, from interview notes, to pictures, to voice recordings.

## BUILDING THE FUSED APPROACH TO COMMUNITY ANALYSIS

In developing this fused approach to community analysis, we aim to pass a reasonably high litmus test:  will this framework of socio-cultural data and analysis of intergroup dynamics improve operational planning and decision-making? Will this fused human-technology approach be of value to

operational planners and leaders? Will it work in the most demanding of environments (i.e., the early weeks and months of a new campaign)?

It is beyond the scope of this chapter to outline the whole multi-year validation and development process, but there are aspects of both elements of the fused approach that we suggest makes the project somewhat unique and may offer opportunities for other projects or groups developing fused technical tools and systems for military leaders

## *DATA COLLECTION FRAMEWORK*

The underlying question concerning our proposed data collection framework is whether collecting data in each of the three elements that inform intergroup conflict will provide the right information to inform operational planning and decision-making. Put simply, if we study a complex community under conditions that mirror the limitations experienced during operations, can we provide the necessary data to inform operational decision-making?

To test what level of data can be collected under these types of conditions, as well as to conduct a job analysis to determine the skills and abilities required for this form of specialized data collection, the project will conduct data collection using a modified form of rapid ethnography[45] for short periods of time in a mature research site. The team will employ a form of grounded theory proposed by Charmez[46] to attempt to address each of the six broad questions previously outlined in the chapter. To the extent possible, the data collection team will labor under the limitations faced by soldiers in the opening of a new campaign. Though the team will have studied the region and will have an initial data collection plan developed in collaboration with intelligence specialists and regional experts, they will not have any preplanned interviews or access to the community negotiated in advance. All interviews and interactions will be conducted through interpreters from the local region and all transport and access negotiated by the team during the data collection period. Likewise the timeline will be kept short to mirror what is more likely available to any such data collection activity during operations.

Approximating the complexities of data collection during operations is challenging but will provide better insight into what level of resources are needed to provide data on the six broad areas we outlined. Rapid ethnography and similar methods might also identify how many teams and how much time are needed for such work to inform military force generation and employment procedures.

### *ANALYTICAL AND COMPUTATIONAL FRAMEWORK*

The software platform and analytical toolbox will be tested in a series of brigade level exercises. Exercises will focus on assessing both the technical stability and utility of the software, as well as provide the research team with a list of the analytical tools and products that will need to be added to the toolbox. Feedback from brigade leadership and staff planners will allow for identification and development of a range of fused intelligence and visualization products that map out how socio-cultural data is best presented and fused with other data sources within the operational planning process. Data from these exercises will be fused into the final analyst toolbox, along with the training requirements and analysis of the necessary knowledge, skills, and abilities for such work.

## CONCLUSION

Fusing insights into community and intergroup dynamics is a difficult problem, especially when one is attempting to simulate the conditions of confusion under which military operations take place. For example, while the U.S. and Canadian militaries invest heavily in operational training, pre-developed military scenarios used for these exercises lack the nuanced and detailed level of intergroup dynamics and interplay that can reasonably simulate the complexities of a real-world community. Nor has it proven easy to determine how to collect and fuse this type of complex data during active operations. Though the social science traditions have rich literatures on collecting field data, the question of exactly what information about a community is critical, and how such key information can be optimally collected, analyzed, and incorporated into military planning amidst the chaos and demands of war is an extraordinarily difficult challenge.

Though the research framework we outline in this chapter has much work remaining, we suggest that it offers a starting point to understand three related questions. First, what information do leaders need to incorporate the intergroup dynamics in their battlespace into their decision-making processes? Second, once we understand what information an operational leader needs, from a methodological perspective, how do we collect it given the limitations of a conflict zone? Lastly, how do we analyze and fuse this rough data with other equally rough and limited forms of intelligence drawn from more traditional sources? The experience and challenges with this fused approach offers three potential areas for other research projects examining the development of tools and methods to support leadership decision-making.

## TAKING METHODS INTO THE FIELD

Deciding to collect community data in an environment that mirrors the limitations faced on operations is difficult. Field work is inherently messy, and multiple trips and periods of work in communities are likely required. Yet working in an actual community, with all its complexity and challenges, offers a much closer bar to defining what skills and abilities are needed to collect and analyze socio-cultural information on operations than a canned scenario or simulation may provide.

## BUILDING ON EXISTING SYSTEMS

Operational level war is inherently a human-centric activity. Targeting and operational decisions are made by human beings under intense pressure in environments of considerable uncertainty. We suggest that what is often forgotten in programs that try to leverage technology for leaders, is that military leadership is not simply math, but a mix of science and art. Technology then, by which we mean the fusion of computational platforms, processes, and training, is used in this project to reinforce, not replace or change, the decision-making processes of commanders. By providing commanders with access to the rich socio-cultural data and insight that has proven incredibly difficult to fuse into operational planning, we suggest that technology can offer commanders qualitatively richer insight and understanding of communities and groups in their battlespace.

## BALANCE BETWEEN SOCIAL SCIENCE AND COMPUTATIONAL WORLD

We suggest that a focus on metadata and computational analysis has shifted the balance of what information is fed to leaders in a troubling way. While trend lines and meta-analyses of social media are important, what is easily forgotten is that the small story or example that helps operational leaders, who traditionally are not computer scientists or mathematicians, also matters. Communities and groups explain their lives, actions and reactions, by stories and histories, not social media. Understanding that rich interplay, for example why a Christian family can only live in one neighborhood but can work in another, matters at the operational level.

We suggest that this framework offers a fused approach that combines the best of both forms of approaches. It is simply not possible to process and interpret qualitative data in operational timelines without ruthless efficiency

and computational power. Similarly, we cannot explain in a meaningful way how human beings live, interact, and perceive each other in complex diverse communities without the use of the human element to collect data in the field.

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# CHAPTER 11

## MISSION COMMAND AND SOCIAL MEDIA: OLD LEADERSHIP PHILOSOPHY CHALLENGED BY NEW INFORMATION TECHNOLOGY?

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Armed forces worldwide are structured as hierarchical, bureaucratic and meritocratic organizations using formalized ranks which often define leadership positions, mandates and responsibilities for all organization members. Military organizations have survived for hundreds of years with this kind of structure. We assume that its design makes the organization functional, alive and well.[1] Along with the pyramid-formed chain of command, there is also a mission command, a cornerstone of many Western Armed Forces.

The philosophy of mission command embodies a decentralized leadership style, relying on trust and initiative. Historically speaking, mission command can be traced to the time of the Napoleonic wars.[2] Nowadays, we live in an age when organizations are vulnerable to rapid change due to social and technological acceleration.[3] This produces high demands on organizations and individuals to continually increase productivity within reduced time frames, whilst trying to manage information-overload at the same time. Media and information technology tends to be consumed "on the go" just like "fast food," decreasing possibilities for critical thinking.[4]

Social media such as Facebook, Instagram and Twitter are web-based and worldwide information-sharing communities which are altering how we communicate in new and unpredictable ways. Social media can be utilized as a tool to enable collaboration and interaction at distance, with 24/7 availability for its users. This combination of old leadership structures, the philosophy of mission command and new communication technologies such as social media, raises many new questions for military organizations. Is social media a threat, a possibility, an obstacle and/or an opportunity for military leaders

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of Swedish Defence University.

in western countries? Such questions will be explored in this chapter. Our ambition is to gain a deeper understanding of how new communication technologies such as social media influence mission command and leadership.

Many researchers have already studied social media and its influence in both civilian and military contexts.[5] The role social media plays in the psychosocial health and well-being of service men and women and their families is extensive and important.[6] Social media provides insight into military life which makes features of this life more transparent to military families. This in turn has repercussions for their psychological health. For example, the use of social media may intensify the emotional response or awareness of social or emotional concerns of both military personnel and their families. The immediate ability to communicate with one's family member through social media can be simultaneously comforting and stressful.[7] Family life and its dynamics may be highlighted through online conversations allowing both sides to share moments and events such as birthday celebrations, a death in the family, discussions about paying bills, finding new living quarters, child-rearing issues and so on. Researchers point out that through social media, issues of depression, longing, loneliness, and other feelings of discontent are shared or experienced.[8]

The influence of social media is not only present at the individual level, but nationally, making political leaders more visible and "human," and, at the same time, giving people a democratic tool with which to build opinion. The opening of closed regimes during the Arab Spring in the early 2010s is one such example. Research involving the analysis of more than three million tweets showed evidence of social media's critical role in the movement.[9] Conversations about revolution often preceded major events on the ground, and social media carried inspiring stories of protest across international borders.[10]

This chapter is based on a literature study of current research and provides an inductive thematization of positive and negative aspects of social media influences on mission command and leadership. We begin the chapter by presenting the organizational conditions, namely the military organization's ability to adapt to new challenges. We will then look at mission command as an old leadership philosophy and social media as a new vehicle for information distribution and discuss this in terms of the threats, obstacles and opportunities which accompany the rapid rise of social media. We hope these findings may prove valuable in educational settings when evaluating leadership, mission command and the consumption of and response to social media in a military context. The chapter may also have practical implications when it comes to leadership development of military personnel.

CHAPTER 11

# THE ORGANIZATION OF ARMED FORCES AND HOW THEY ADAPT TO NEW CHALLENGES

Military organizations are bureaucratic and hierarchical by design. Their bureaucracy is a special structure which is administrative in nature and which emerged in the middle ages, reaching a peak in its development in Western civilization during the 1900s.[11] According to Weber, bureaucracy provided a solution to the administrative needs of the time. Characteristic features of bureaucracy, as distinct from other forms of administration, are: the division of labor among employees is fixed; there are rules which stipulate how tasks should be performed; any property or rights which are attached to an office are considered separate from the person who holds that office; employment is based upon technical qualifications; employment is viewed as a life-long career progression which provides security; employees receive a fixed salary based on rank; and the employee has predetermined rights to prevent them from being forced or coerced to perform certain actions, except under specified and pre-prescribed circumstances. Employees also have the opportunity to appeal decisions as well as to make formal complaints. In addition to hierarchical structures within a command, there is a hierarchical ordering of the different military units themselves.[12]

Hierarchy is one of the strongest features of bureaucratic organizations. One could argue that bureaucracy is actually a form of management and hierarchy is a type of structural form found within an organization. Hierarchical organizations are often depicted as pyramids with defined responsibilities and competencies: the higher one's position in the pyramid, the greater one's power and responsibility, whilst the breadth of the pyramid indicates the number of personnel at each level. Bureaucracy is a way in which a large number of people can be organized more effectively.[13] According to researchers,[14] hierarchies are useful in creating equal conditions for those within them and at the same time conserving scarce resources. This is one of the reasons why hierarchical structures continue to dominate.[15]

As hierarchical bureaucracies, are military organizations genuinely adaptable? Bureaucracy in its purest form (i.e., according to Weber's ideal) is rigid, wholly impartial and functions without prejudice. As such, it functions best when dealing with standard routines with predictable results, assuming a stable operating environment. But in reality this is not the case. Bureaucracy is considered by many to be inflexible and unable to cope with dramatic change, crises or chaos.[16] Yet, despite their rigid structure, bureaucracies and hierarchical organizations are indeed capable of handling crises and sudden change.[17] During everyday activities (e.g., when not in a crisis

situation), military organizations are most like Weber's ideal type. However, in a time of crisis, individuals, whether they are members of an organization or not, can prove useful to a military organization when it is adapting to demanding conditions. The actions of individuals will determine whether organizational adaptation is successful or not.[18] By virtue of their ability to shift from a traditional bureaucratic form to one which caters to more flexible forms of decision-making, we would argue that these organizations are "adaptable bureaucracies" and their adaptation takes place in several ways: by being able to use hard (command) and soft power (diplomacy) in combination with conscious contextual intelligence (situation awareness);[19] by using "boundary spanners" as liaison positions which operate at both central and field levels to facilitate cooperation and communication among authorities, to save time and enhance the formation of a better operational picture; and through a balancing act between following standard procedures or rules and improvisation at both central command level and in the field, where operations are taking place and the environment is initially characterized by chaos. Many studies in both military and civilian contexts show that flexibility is the most essential characteristic for the fulfilment of an organization's task.[20] In military terms, this last example can be discussed in terms of mission command. We will now describe it briefly.

## MISSION COMMAND: AN OLD LEADERSHIP PHILOSOPHY

Mission command is a model for the management of combat first developed by the German army during the 1800s. By the 1930s, it had been adopted by the Swedish Armed Forces. Today, mission command is used by military organizations throughout the world as a management philosophy.[21] The core feature of mission command is both the clear formulation of tasks and allocation of resources by those in leadership positions, along with considerable freedom or latitude granted to those in lower levels of the organization in carrying out those tasks. Tasks are resolved at a tactical level following instructions from leadership as to the desired outcome. It is the result and not the procedure which is examined, which produces the framework in which there is scope for freedom of action at the tactical level. In order to enable the best possible execution of tactical missions, there must exist a clear awareness of goals, purpose and situation on the part of both management and lower ranks. Stephenson has described six foundational principles for mission command: mutual trust, shared understanding, disciplined initiative, commander's intent, mission orders and prudent risk.[22] These principles can come to be challenged by social media.

# SOCIAL MEDIA: A PRODUCT OF SOCIAL AND TECHNOLOGICAL ACCELERATION

Society is changing at an ever increasing pace, both socially and technically.[23] Rapid change can produce organizational practices which are focused more on solving short-term problems, rather than long-term goals and strategies. Whereas it was once possible to take a visionary approach, those in leadership positions are now often hard-pressed to keep abreast of change and on top of any necessary adaptation arising as a result. Social media's launch and rapid uptake in society, along with its profound and far-reaching impact on both the personal and professional spheres, is a key example of accelerated change. Many scientists are questioning the benefits of these rapid exchanges of information in our society. Backlund argues that we are experiencing some negative "visual and auditory littering" as a consequence of social and informational acceleration.[24] Our linguistic and social abilities are being depleted and contact between people is growing increasingly superficial.

The speedy development, spread and wide availability of social technologies are together changing individual and organizational conditions.[25] A rich socio-scientific discourse describes the increasing speed in social exchange processes as characteristic of contemporary life.[26] This social acceleration combined with technical development brings with it increased expectations of productivity within reduced timeframes. According to Rosa, this has meant that policy makers have lost the ability to predict future events, as well as any meaningful sense of being able to plan.[27] The same can be applied to military organizations. One could say that social and technological acceleration has taken military personnel and organizations "hostage." This is a process that cannot be controlled, according to Rosa. He argues that changes taking place in the move from modernity to post-modernity are beginning to constrain the state and the military in ways that are causing them to lose the control that the processes of acceleration once gave them. According to Rosa:

> "… today one must expect from the dynamization of warfare the forthright inversion of the relations of classical modernity, namely, the *demilitarization* of war, the decline of the monopoly of violence, and the 'outbreak of civil wars' […]."[28]

One aspect of acceleration that has influenced military organizations is the rapid evolution of social media, which military organizations have been quick to embrace. This means that the boundaries between civil society and military organizations are becoming more fluid and diffuse. The use of social media with immediate contact between civil society and military personnel includes both opportunities and increased risks. One of the risks is a lack of knowledge

about who is and who is not using social media and why, and the conditions under which they positively or negatively affect military personnel, military organization and leadership.[29] We need to understand that the gradual infiltration of social media in military workings has predominantly been driven by military personnel, rather than the military institution. This is one of the reasons why social media needs to be discussed from both individual and organizational perspectives, focusing on both positive and negative aspects of its influence.

We will first present positive aspects of social media and its influence on mission command and leadership, followed by a discussion of social media's more negative influence. We will devote a greater proportion of time to the discussion of negative aspects, given that "bad is stronger than good."[30]

## MISSION COMMAND AND SOCIAL MEDIA: POSSIBILITIES AND STRENGTHS

Three are positive aspects of social media for military operations which we will discuss: the opportunities arising from technological development, engagement of civilian assistance, and physical and mental relief.

## OPPORTUNITIES ARISING FROM TECHNOLOGICAL DEVELOPMENT

The rapid technological changes taking place in society bring with them both challenges and opportunities for military organizations. Although the ability to plan and work proactively becomes an almost paradoxical task due to the pace of change, technological developments can make certain tasks easier. For example, GPS and navigation systems with digital maps can assist in navigation in difficult terrain, and smartphones and mobile networks can be used by civil groups and individuals to cooperate; such technologies have proven particularly successful in the work of rescue services in crisis management operations.[31]

It should be noted that that there is very little research concerning social media within military organizations, or how, for example, social media influences mission command. Social media is seen as a phenomenon which has been imported into the organization but further research is needed around the problems and challenges it poses for mission command, and how these can be resolved, first of all, by implementing existing Information and Communication Technology solutions and then, if required, evaluating the need for new approaches.

### *ENGAGEMENT OF CIVILIAN ASSISTANCE*

In Italy, civil rescue operations and their volunteers are using smartphone technology to build up central resources and receive reports from civilians.[32] In Sweden, public contribution to military operations, especially in relation to mission command, has not as yet received any attention. It may also be worthwhile to develop procedures for the use of smartphone technology by the general public in areas where civilian assistance is considered beneficial, in addition to procedures for their use by military organizations.

### *PHYSICAL AND MENTAL RELIEF*

New technologies are also used in conjunction with medical care in military contexts, ranging from specialist operations to assessing the health of soldiers and their readiness to engage in battle. New types of information technology and social media can be associated with medical and psychological assessment to reduce anxiety and fear on the part of soldiers. Increased levels of psychological relief have been shown to be achieved when soldiers make contact with their families via social media. Reduced anxiety and fear among soldiers and their dependents has been linked to better performance in combat.[33] The back of the coin is that the use of social media can also enhance feelings of loss and separation from loved ones.

Other researchers emphasize that social media can affect military personnel in a negative way. Forces are held together by "blood, sweat and tears"[34] and *esprit de corps*,[35] which according to some writers, means that social media may drive up a sense of isolation by reinforcing notions of absence and separation rather than reducing them.[36] This conclusion produces a range of obstacles and threats arising from social media.

## MISSION COMMAND, LEADERSHIP AND SOCIAL MEDIA: OBSTACLES AND THREATS

Communications technology plays a central role in how organizations and businesses are structured in both the private and public spheres, particularly among the armed forces and other crisis management organizations which are quick to take up new technological innovations. Use of new information technology facilitates a readily available database of knowledge and experience. However, one consequence of the flow of information which is very quick and easy to digest is that more formal, well-established, professional sources of knowledge are replaced with informal social channels, the result of which can be both beneficial and detrimental to business.

The use of social media poses a direct threat to the implementation of military tactics in three ways: fear of making decisions due to increased transparency, the involvement of civilians and the pace of technological change being out of step with that of military organizations.

## *FEAR OF MAKING DECISIONS DUE TO INCREASED TRANSPARENCY*

> "Social media is the biggest revolution of recent years. The sum of it is that the information technology of today is making it more difficult for managers to make decisions - much more difficult in fact, because managers today are much, much more afraid of making mistakes! This is because what they say and do is spread immediately, for immediate feed-back and commentary."[37]

A lack of awareness of social media, or the concrete strategies for responding to it, presents a series of challenges for today's leaders, such as the fear of making certain decisions, as outlined in the comment above. A key question to answer is: if military leaders are *afraid to make decisions* because of the threat posed by potential social media coverage, how can mission command function properly in the field?

The threat of social media can endure over time when images and other documentation is stored by "the owner" to be used when the opportunity arises. For example, commanders and soldiers were accountable for their past behaviour when images turned up in media of abused Abu Ghraib prisoners in Iraq. According to Professor Paul Bartone,[38] one of the many causes and situational factors contributing to this prisoner abuse was ambiguity in the chain of command–soldiers at the Abu Ghraib prison were unclear as to who was in charge. The presence of other authorities, like the Central Intelligence Agency (CIA), allowed them to "operate under different rules", and may have contributed to a "destructive form" of mission command together with other psychological causes.[39] Thus, a fear of making decisions can have short- and long-term effects and/or consequences.

## *THE INVOLVEMENT OF CIVILIANS*

Media coverage and greater transparency in military matters has led to the increasing involvement of civilians, who may be first on the scene in events involving military personnel.[40] The easy accessibility of social media also means that private individuals, local communities and officials other than the military can all play a greater role in many different contexts.[41] Overall,

research indicates that the influence of social media poses both opportunities and challenges in the type of two-way communication it facilitates between the public and authorities.[42] Existing research is focused primarily on the dissemination of information and, to some extent, its consequences.[43] Therefore, there is a need for research into both civilian participation in the dissemination of information and the role of social media in this process. We will broaden the issue here by assuming that civilian involvement is increasing in the field, and that, when this happens, it occurs via social media. Our understanding of the public's presence is not just in their ability to "see," but to control the focus of attention, which can in turn influence operational tactics.

Using social media can be an advantageous and effective way of managing information. However, the question is whether civilian involvement in different situations can affect mission command and how? Consider the interaction of the civilian gaze, social unrest and civilians as an attacking force. If a person is being observed, or even thinks they are being observed, they may modify or regulate their behaviour as a result. The practice of looking and being observed involves a power relationship between the watcher and the watched, and the notion of the "gaze" embodies the power of the observer in this relationship.[44] Mobile phone technology makes it easy for civilians who are in the field to film operations as well as the military personnel involved. Material filmed in this way has helped to expose individuals and professional groups when, for example, a short clip is broadcast by official news outlets and results in an extensive media drive. Despite the absence of such direct experience of this sort by the Swedish Armed Forces, the mere knowledge of the potential for this type of reporting can affect mission command, both positively and negatively. It has been noted by Goffman that the knowledge that we are being observed can reduce our ability to properly perform a task.[45]

During the past decade, a number of countries have experienced social unrest in the form of arson, stone throwing and acts of sabotage. The Arab Spring is an example of social unrest which spread quickly on social media. We need to better understand social unrest and what types of collaborative interventions of police, rescue services and the military are likely to prove most effective.[46] We also lack understanding as to how cooperation among different organizations and civilian groups might promote or counteract civil unrest. The questions to be answered are numerous. How do military personnel in the field assess the likelihood of recording technology (for the purpose of broadcast on social media) being present in the area? How does the presence of this technology affect the task at hand? We also ask if military

personnel have the scope to react in new ways and develop new methods when faced with novel situations. To act independently or innovatively requires freedom from fear as well as trust that one's management will welcome new types of responses. How does the public's controlling gaze (and mobile recording devices) produce fear or affect trust? Can the fear of being filmed or photographed undermine the courage to act independently or creatively in order to carry out the instructions of mission command?

### *THE PACE OF CHANGE AND INFORMATION OVERLOAD*

The pace of a bureaucracy's response to new situations may be out of step with the pace of technological and social change. A lack of synchronization is another factor which appears to affect mission command and implementation of operational objectives. This illuminates the paradoxical moment when rapid social transformation meets the traditionally slow processes of organizational change. There may well exist an incompatibility between those relatively slow decision-making processes and rapid technological innovation. This can lead to friction between different levels of the organization when steps in the chain of command are bypassed in the interest of dealing with issues quickly,[47] which can in turn lead to conflict between parties[48] and the poor prioritization of resources.[49] Collectively, these results can delay and complicate a military operation.

> "Just the other day I was discussing this issue and the way in which we are so available these days that you can have a single soldier dialing the General directly to say what he thinks and feels, and then bosses can start acting on that and maybe make decisions. Then the staff has to try to catch up with the bosses. That is the way I feel– everybody is informing everybody but there has not been any preparation of the staff.[50]

## CONCLUSIONS AND PRACTICAL IMPLICATIONS

The purpose of this chapter is to provide an inductive thematization of positive and negative aspects of social media influences on mission command and leadership. Three positive aspects of social media for military operations have been identified: the opportunities arising from technological development, engagement of civilian assistance, and physical and mental relief. We have also presented three areas where the implementation of mission command's

objectives are directly threatened by the use of social media: the fear of making decisions due to increased transparency, the involvement of civilians, and the pace of technological change being out of step with military organizations.

Although this literature review must be regarded as preliminary, it is clear that further research is needed in this area. The scarcity of research-based knowledge implies a need for an openness towards single case experiences which can then be aggregated to evidence-based practice, and finally, to research-based recommendations. We suggest two broad routes for forthcoming studies. First, since there is little knowledge of this area, we suggest inductive, open-ended studies to make preliminary maps of all relevant areas of enquiry and their potential interrelationships. Traditionally, qualitative methods such as Grounded Theory have proven valuable in this respect.[51] Second, we suggest deductive studies of core concepts from mission command as point of departure (e.g., the six fundamental principles for mission command described by Stephenson).[52]

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# CHAPTER 12

## SOCIAL MEDIA IN THE MILITARY: OPPORTUNITIES, PERILS AND A SAFE MIDDLE PATH

***Brigadier Mick Ryan, AM; and Brigadier Marcus Thompson, PhD, AM****

*"Innovation is fostered by information gathered from new connections."*

*Margaret Wheatley*[1]

Social media has revolutionized global communication and professional discourse. It has demonstrated a capacity for penetration that is historically unprecedented, especially compared to other means of communication. For example, Facebook took just 12 years to gain 1.65 billion users globally, and Twitter has gained over 300 million users in a decade. Social media are distinct from other forms of media primarily because they are more viral, users are more likely to share content in their social networks and social media users are highly mobile. Social networking has a very high penetration of Australian society. In June 2016, there were 15 million Facebook, 5 million Instagram, and 2.8 million Twitter users in Australia.[2]

Members of the Australian Defence Force (ADF) are no different than other members of Australian society. They have largely embraced the various forms of social media available to them, and they use them to communicate at home, on courses, in the field, and during operations. The story of social media is one of opportunity and threat for members of the military. It offers a level of transparency and global interaction that has not been possible before. But without well-informed use, social media also presents potential threats to our people, units and operations.

This paper reviews the rationale for the use of social media in the military. It does so by examining the benefits and the risks of social media use by the army's people and the institution. The paper then provides an analysis of the most appropriate and effective uses of social media, ensuring that individuals, units and commanders are able to exploit this most modern form of

* The views expressed in this chapter are those of the authors and do not necessarily reflect those of the Australian Defence Force.

communication in a way that is informed, interesting, and protective of essential friendly information.

## WHY THE MILITARY SHOULD USE SOCIAL MEDIA?

Brigadier Ryan recently discussed the employment of social media in a single combat brigade within the Australian Army.[3] Collectively, many lessons were learned over a year of implementing this enhanced approach to communicating with a range of different audiences, but the exercise demonstrated an opportunity to "scale up." That is, to use social media for the variety of "raise, train, sustain" functions that are executed on a daily basis. This is not to say that Australian military organizations don't already have a social media presence–they do. The Army Facebook page has a following nearly ten times the size of the Australian Regular Army. The Army Twitter feed, while having a smaller presence, has also established a foothold in the Twittersphere.

But presence is not the same as an institution fully exploiting the potential of social media. It is therefore worth examining the opportunities for organizational adoption of social media, and those areas where adoption is most likely to have a good return on the time and people invested in generating social media products, presence and discourse. If military institutions are to fully realize the potential of social media, they will need all leaders of the services from top to bottom to embrace and advocate its use. Below are seven reasons why military leaders should embrace and advocate for the institutional adoption of social media.

1. Social media is a great way to understand, connect and interact with a global community of military professionals, many of whom are eager to engage in professional discourse and debate. Unlike email and journals, social media is open to a global audience at all times, and access is open to all. It permits leaders to gain an understanding of topical issues and challenges as a tripwire to great web content. It also permits leaders to understand the breadth of views and opinions among military professionals and to engage in debate. Initiatives such as @DEFConference[4] have brought together young professional military personnel. It has spawned websites and social media feeds that democratized and enhanced the breadth of professional military discourse.
2. Social media is a useful mechanism to break through the generational strata and for leaders to engage their entire workforce. It is one means that Generation X leaders can engage, interact with, and understand their Generation Y workforces, which now make up the vast majority

of military organizations. Generation Xers cannot fully appreciate how best to lead Generation Y service personnel without understanding social media. Persisting with older forms of communication, without embracing new and relevant means, is like refusing to use a telephone a century ago.

3. Social media is another means to foster and improve transparency in military organizations. Both transparency and auditability are core responzibilities of military organizations in democratic nations. Cleverly employed while maintaining operational security constraints, it provides timely insights into the daily workings of military organizations or a broad distribution of key initiatives. Social media should also be used as part of a broader public affairs and strategic communications approach, and complement existing public affairs mechanisms.

4. Social media provides an additional layer of understanding for military families and enhances their capacity to visualize the challenges and achievements of their relatives. In the case of army units and schools, Facebook pages have been very popular with families and members of the public. Providing information on the activities of service members to their families can be invaluable. The access to information assists in family comprehension of the contribution of their family members' service and does so in an accessible and easily-understood way. This is especially the case for deployed family members, but is also relevant for all service personnel regardless of their employment location.

5. Social media adds to the range of tools for military leaders to recognize achievement by their people. Most military organizations have multiple ways to acknowledge achievement, courage and service through medals, ribbons, and commendations. However social media offers the capacity to publicize these traditional achievement recognition approaches. It also can be employed as an additional way to acknowledge achievement through rapid posts that acknowledge individuals and groups.

6. Social media can also be employed for rapidly sharing lessons. The Internet was a critical enabler for sharing operational lessons from both Iraq and Afghanistan, and for fostering debate on the range of responses available during particularly challenging periods of those campaigns. Social media played a role in this sharing of lessons, but could potentially offer a larger contribution if senior leaders openly use and advocate its use in this way.

7. Finally, social media holds the potential to be used as an integral part of new digital age education, training and doctrine systems. Several

academics[5,6,7,8] have examined the application of social media in education and training. While there is still some way to go in examining the opportunities and challenges of social media in these areas, it is clear that digital age training, education and doctrine development–which use a mix of residential and non-residential approaches–must exploit the most effective means of communication available. Social media therefore must be part of this "kit bag" of available approaches for interaction and debate in any evolution of how the military trains and educates its people and develops its doctrine.

Some have found the challenges of social media, particularly security concerns or misunderstanding its value, difficult to surmount or to be a sufficient cause to delay the adoption of its use. For military organizations, social media must now move beyond the discretionary and into the realm of business as usual. In the absence of face-to-face interaction, social media is one of the most powerful ways for leaders to pass information, broadly convey intent, and for all to communicate, interact and foster professional sharing and discourse. But that is not to say that there aren't some negative aspects; there are perils in the employment of social media which members of the military and military institutions must appreciate.

## THE PERILS OF USING SOCIAL MEDIA

*War is tough. It's tougher if you're stupid.*[9]

The key strengths of social media–global audience, open access, an ability to rapidly share information–are also its Achilles' heel. The use of social media and other online services by members of the Australian Defence Force generates significant security vulnerabilities for themselves, their friends, and their families, as personal information (including family details) can be exploited by malicious threat actors as a potentially rich source of intelligence.

Recent observations during a major Australian Army exercise highlight an operational security risk resulting from the prolific personal use of social media by members of the ADF. Threats to individual members of the ADF, their friends, and their families in the present day is a clear risk as social media can be used to identify people who might otherwise remain anonymous. There is also a future risk to these same people due to the cumulative use of social media. As ADF members become more senior, they may gain the interest of Foreign Intelligence Services, and material they posted in their youth could be used to manipulate them. Finally, social media postings create conditions that allow a malicious actor to generate actionable intelligence from aggregating and correlating multiple sources of information.

During Exercise Hamel in June 2016, personal or sensitive information was identified on social media for 680 ADF members. This information was freely available and gained via the internet without the use of malicious or even remotely sophisticated methods. Using only openly available tools and techniques, and the social media information posted by members of the ADF, intelligence analysts were able to identify the location, nomenclature, equipment, and organization of deployed forces. The process of geo-location enables the accurate determination of locations in images posted to the web, making it possible to locate individuals and identify troop movements. Confirmation through the correlation of other open sources of content can, in some cases, result in the production of highly accurate, actionable intelligence that could be immediately targetable.

The advent of the smart phone and a proclivity to share information on social media with wide-ranging networks has increased the opportunity for ADF personnel to inadvertently breach security. The monitoring capability used to gather and collate this information during Exercise Hamel was relatively unsophisticated when compared to the known capabilities of current and potential adversaries. Sensitive and/or personal information was freely available on social media. The key reasons for this availability included:

1. Poor security settings on social media profiles (mostly Facebook).
2. Geo-tagged posts linking locations to ADF members and activities.
3. Uploaded images linking ADF members to their ADF service and actual role.
4. ADF Public Affairs posts or images that linked ADF members to Exercise Hamel.
5. Links from ADF members to numerous other ADF members through friend lists, comments and tagged posts.
6. "Liked" defence-related pages, such as the official Facebook page of the member's unit that had uploaded defence-related images, such as a graduation from recruit training.

In isolation, the security effect of each individual observation was minor. However, the aggregation of multiple pieces of open source information via the online profiles of a large number of ADF members created significant weaknesses.

The proliferation of the use of social media and open source media platforms by ADF members and the general public has resulted in a plethora of publicly available sensitive and personal information that has the potential to be

exploited by malicious threat actors who do not respect Australian domestic laws, such as the *Privacy Act 1988*. Such threat actors could potentially use sensitive and personal information on ADF members for malicious activity such as:

1. Defeating passwords: Personal details are often used in passwords and can be easily entered into free password cracking software as part of a cyber-attack.
2. Social engineering: Email accounts are generally used to reset passwords for multiple websites and accounts such as PayPal, eBay, and Amazon.
3. Identity theft: One in five Australians becomes, often unknowingly, the victim of identity theft. Australians are also disproportionately likely to be the victim of identity theft over all other forms of crime.[10]
4. Exploitation by Foreign Intelligence Services: Foreign Intelligence Services, including Da'esh and the Cyber Caliphate, employ thousands of people to regularly acquire information on military personnel and their families.
5. Physical interception: Locations that are visited and geo-tagged online can lead to physical interception of sensitive items, such as mobile phones, that can subsequently be used to attack banking, email, and social media accounts.
6. Blackmail: Embarrassing or private information from dating/adult websites or family members' sensitive information can be used to extort individuals for financial or personal gain.

While social media has many clear benefits in sharing information regarding the raising, training and sustaining of military forces, much of that information is also relevant to operations. Details regarding the status of friendly military capabilities, including personal information; family information; tactics, techniques and procedures; and training standards are valuable to current and potential future adversaries. The risk of using social media to share such information must be recognized, assessed, treated, and the residual risk accepted.

Noting the observations from Exercise Hamel, a reassessment of the army's social media usage policy is required. This is to ensure an appropriate balance where the safety of army personnel and sensitive information is protected, while at the same time, our people and organizations continue to employ appropriate social media to engender transparency and a closer connection between the military and Australian society.

## A SAFE MIDDLE PATH: SOME RULES FOR SOCIAL MEDIA USE

This paper does not propose that members of the ADF be banned or dissuaded from using social media. The benefits of personal and institutional use of social media, and the likelihood many would ignore any such bans, precludes this approach. But the ADF does have an obligation to ensure its members use social media responsibly and safely. This will ensure the safety of individuals and operational information.

A social media safety campaign could help reduce exposure to online threats. This might entail relatively simple security measures such as locking accounts so they are accessible by only known entities. Other actions that can be taken by ADF members to limit individual and organizational online vulnerabilities include:

1. Arranging privacy settings to protect a personal social media profile, noting that individual account settings can affect anyone that has links to that account.
2. Speaking to family and friends about what they post and "tag" to their social media accounts.
3. Considering what is uploaded, whether it is an image or information, and who may access it.
4. Awareness of geo-data attached to uploaded content.
5. Considering whether there is a need to identify as a military member, and what other personal and sensitive information is attached to ADF member's social media profile.[11, 12]

These rules can provide the balance of safe use by our people, while allowing them to use social media for personal and professional applications. But it is also clear that employment of social media for collecting information also has great utility.

If used appropriately, social media and open source content can provide an excellent opportunity to develop tactical situational awareness in support of military planning and decision-making. Fusion with other intelligence sources can present friendly commanders with a near real-time understanding of atmospherics and critical warnings and indicators for adversarial force actions and intent. Information that would have previously taken traditional intelligence sources days or weeks to confirm can now be collated and analyzed almost immediately. Additionally, social media can be used for our own influence, psychological operations, and deception purposes. Russian

sympathizers utilized such capabilities to good effect in the Ukraine,[13] and the ADF could develop similar tactics for use against our adversaries. It is also clear that social media has military application in sentiment analysis, influence operations and locating persons of interest.

The ADF must educate its personnel regarding the threats and vulnerabilities of posting information on social media, and the importance of identifying essential elements of friendly information. It is not clear how many unit commanders produce essential elements of friendly information and inform their personnel about what information can and cannot be posted on social media. The observations from Exercise Hamel 2016 highlight the lack of security planning and awareness that comes from the absence of command prioritization and formal articulation of what information is to be protected.

## CONCLUSION

> *Unsurprisingly, social media can be both the cause of and the solution to your organisational crisis. It's an ally and an enemy at the same time.*
>
> Nicole Matejic[14]

The employment of social media by our people and institutions has a compelling logic. It is simple to use, allows the easy sharing of information and enhances transparency of national institutions such as the ADF. But the use of social media is not risk free. As this paper has described, unconstrained and uninformed use of social media poses a threat to personnel and the potential for exploitation of sensitive information in the military.

There is neither a rationale nor capacity to prevent the use of social media by ADF personnel for security reasons. But as an institution that seeks to successfully prosecute operations and keep its people safe, the ADF has a responsibility to provide education and guidance to its people on safe use of social media.

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# GLOSSARY

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| ADF | Australian Defence Force |
| ALP | Action Learning Process |
| AUTO-GCAS | Automatic Ground Collision Avoidance System |
| C2 | Command and Control |
| CEO | Chief Executive Officer |
| CEP | Command Effectiveness Process |
| CIA | Central Intelligence Agency |
| CTEF | Command Team Effectiveness Framework |
| DARPA | Defense Advanced Research Projects Agency |
| DRRI2 | Deployment Risk and Resilience Inventory |
| ELICIT | Experimental Laboratory for Investigating Collaboration, Information-sharing and Trust |
| EO | Equal Opportunity |
| EOD | Explosive Ordnance Disposal |
| FFAB | Form Function Attribution Bias |
| GPA | Grade point Average |
| GS | "good strangers" |
| HDS | Hogan Development Survey |
| HI | Horizontal Inequities |
| HPI | Hogan Personality Inventory |
| ICT | Information and Communication Technologies |

## GLOSSARY

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| ILD | Institute for Leader Development |
| IPB | Intelligence Preparation of the Battlefield |
| ISIL | Islamic State of Iraq and the Levant |
| ISIS | Islamic State of Iraq and Syria |
| ITT | Integrated Threat Theory |
| LDS | Leadership Development System |
| LMS | Learning Management System |
| LTDF | Leadership Team Development Framework |
| MLQ: CTI | Multifactorial Leadership Questionnaire: Cooperation/ Collaboration, Trust in Information |
| MVPI | Motives, Values, Preferences Inventory |
| NATO | North Atlantic Treaty Organization |
| NCE | Network Centric Environments |
| NORAD | North American Aerospace Defense Command |
| NSA | National Security Agency |
| NZDF | New Zealand Defence Force |
| RGCT | Realistic Group Conflict Theory |
| RMA | Revolution in Military Affairs |
| SAF | Singapore Armed Forces |
| SAR | Synthetic Aperture Radar |
| SDI | Strategic Defense Initiative |
| SIGINT | Signals Intelligence |
| SIS | Student Information System |
| SIT | Social Identity Theory |

| | |
|---|---|
| SPV | Survey of Personal Values |
| SSIM | Strategic Social Interaction Modules |
| TBTL | Team Building and Team Learning |
| UCLA | University of California, Los Angeles |
| US | United States |
| USAF | United States Air Force |
| USAFA | United States Air Force Academy |
| USMC | United States Marine Corps |
| V3R | Vision, Roles, Rules, Relationships |
| WERC | Warfighter Effectiveness Research Center |
| WWII | World War II |

# INDEX

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