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SPECIAL EDITION: THE ADAPTIVE ARMY

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EDITORIAL

In July 2008 the Chief of the Army Lieutenant General Ken Gillespie announced a significant program of changes under the rubric of Adaptive Army. It had become apparent during the period of increased operational tempo since 1999 that Army's structures had become obsolescent. The system of Functional Commands, which had been in place since 1973, no longer reflected the way Army did business.

Indeed, Army's higher command and control systems no longer adequately reflected the inherently joint nature of the Australian Defence Force's (ADF) command and control arrangements. This had become especially significant in the light of the raising of Joint Operations Command (JOC). A rebalancing of Army's command and control structures was long overdue.

However, in addition to more effectively aligning Army with extant ADF Joint Command arrangements, Adaptive Army aims to achieve significant internal improvements within the Army. The Army has been restructured to ensure that it is more effective and efficient in its conduct of force generation and force preparation. To support this end-state Army's internal structures have been linked to different temporal adaptation cycles.

However, the Chief of Army has made clear that Adaptive Army is much more than an organisational change. It must also change the culture of the Army. Indeed, cultural change is vital if Army is to become more agile and adaptive in learning lessons and sharing them throughout the organisation. In particular, the proliferation of so-called 'new media' has created a challenging environment for traditional hierarchical organisations. Army is such an organisation and it derives great strength from its distinctive culture.

But in the age of Blackberries and blogs, organisations that cannot rapidly adapt to changes in their environment will fail. Rapid and efficient management of knowledge is essential to effectiveness. Adaptive Army postures Army to respond to the issues of force generation and the maintenance of foundation warfighting skills in this dynamic environment. Ultimately, every officer and soldier needs to commit to the practice of lifelong learning and adaptation for this culture to become embedded within the Army.

To support the Chief of the Army in the transition to the Adaptive Army, the *Australian Army Journal* has dedicated the entire contents of this, the Summer 2009-10 edition to its implementation. We are delighted to be able to lead the special edition with an introduction by the Chief of the Army which provides his perspective on what has been achieved to date and the areas in which he sees need for further work.

The remainder of the issue examines various aspects of Adaptive Army, including the Future Land Operating Concept as well as insights as to how other military organisations have coped with the rapidly changing information environment. In particular, we commend the articles by Warrant Officer Class One Dave Ashley, the RSM of Forces Command, on the need to empower junior leaders in order to implement the Adaptive Campaigning approach, and that of Brigadier Justin Kelly (Retired) which should resolve one of the recent controversies among readers of this Journal about the relevance of the so-called Boyd Cycle or OODA Loop.

We hope this special edition generates wide discussion and debate within Army. We hope that we are able to provide a forum for discussions that assist the Chief of Army in promoting a learning culture within Army. For that to happen we need readers of all ranks to engage with these issues and commit your thoughts to writing.

One officer who has regularly responded to this challenge is Colonel Roger Noble. He has been awarded the Chauvel Prize for the best essay published in the *Australian Army Journal* this year for 'Beyond Cultural Awareness: Anthropology as an Aid to the Formulation of Military Strategy in the Twenty-First Century', which appeared in the Winter 2009 edition.

As this edition reaches units many members will be preparing to take Christmas leave. To all members of the Australian Army and their families we wish you a merry and safe Christmas and a very successful New Year. To those deployed on operations around the globe who are unable to be with your families at this time, we especially wish you the compliments of the season and a safe return to Australia.

INTRODUCTION

THE ADAPTIVE ARMY INITIATIVE

LIEUTENANT GENERAL K J GILLESPIE

ABSTRACT

The Australian Army's success in force generation and preparation and the conduct of contemporary and future operations will be determined largely by its capacity to learn and adapt. Only through a continual cycle of reviewing and adapting in response to a changing environment will the Army retain its ability to fulfil its operational charter while also creating a culture that is capable of encouraging innovation and creativity. The 'Adaptive Army' initiative is more than a simple reorganisation. It is a cultural realignment that seeks to generate profound change in training, personnel management, knowledge management, learning cycles and, eventually, the Army's culture.

The strategic environment in which the Army operates has altered significantly over the last decade. This tumultuous period has been marked by the rise of violent extremism and the consequent need to develop the capabilities to combat this extremism in an extraordinary variety of theatres. This is also a period that has seen the Australian Army operating at a significantly higher tempo in a range of complex environments in vastly differing roles including warfighting, peace support, stabilisation operations and humanitarian assistance in the wake of natural disaster. The Australian Government has demonstrated a

willingness to invest more in Australia's land forces, producing a commensurate increase in the Army's size and capability. Conversely, the recent financial crisis has highlighted the necessity for the Army to operate in a climate of economic stringency. Precious resources must be utilised effectively and the Army must invest wisely in those future capabilities likely to provide the greatest utility across a broad range of scenarios.

The Army's response to its changed environment has taken the form of a rigorous self-examination that has lasted the better part of twelve months and produced a strategy now known as the 'Adaptive Army' initiative. The last time that the Australian Army undertook such a comprehensive review was in the early 1970s. Then, the Army introduced a system of functional commands which served its purpose well until the early 1990s. However, as the operational tempo increased in the late 1990s, this structure began to show its age. That juxtaposition of an ageing structure and a dynamic operational environment proved the catalyst for the development of the Adaptive Army initiative—an initiative designed to ensure that the generation and preparation of land forces is conducted more effectively and efficiently and is better aligned with the new joint command framework.

The Australian Army has a long history of adapting to enormously varied operational scenarios. Yet, to adapt most effectively—in a systemic manner throughout the entire deployed force—the organisation that builds the force for deployment must be characterised by a culture of adaptation. Logically, it follows that the Army as an institution also must boast such a culture of adaptation, and must be equipped with efficient feedback loops—particularly to aid lesson reten-tion—so as to adapt readily to operational demand. I am convinced that such a culture of adaptation will see the Army best placed to meet the contemporary and future security challenges that are its core business.

The Adaptive Army initiative has been exten-sively wargamed and modelled and has proven its worth as a vehicle for the evolution of the Australian Army into a more effective and agile

> The Adaptive Army initiative is more than a simple reorganisation.

army. The Adaptive Army initiative is more than a simple reorganisation. It is a series of inter-linked initiatives, bound together through common intent, to ensure that the Army remains relevant and effective and that it maintains its reputation as one of the nation's most respected institutions. It encompasses personnel initiatives, materiel management improvements, advances in training and education, advances in knowledge management, better equipment and new doctrine. The Adaptive Army initiative, its character, its aims and the profound change it promises are explained in detail in this article.

WHAT IS THE ADAPTIVE ARMY INITIATIVE?

The Adaptive Army initiative is the most significant restructuring of the Australian Army since the implementation of the Hassett reforms in 1973. The former system of functional commands reflected the assumptions of an earlier era when the single services of the Australian Defence Force (ADF) tended to collaborate more effectively with their allied counterparts than with other elements of the ADF. Not until the era of defence self-reliance did the ADF develop a truly joint mindset. In today's climate the Army never operates alone and its structures must reflect this simple truism while also providing institutional agility and adaptability.

> The Adaptive Army initiative is a cultural realignment designed to inculcate an institutional culture of adaptation …

The most visible and immediate change under the Adaptive Army initiative is the replacement of the existing system of functional commands with a new command and control structure based on different temporal learning cycles. The new Army structure comprises a reorganised Army Headquarters (AHQ) and three subordinate functional commands:

- **Forces Command (FORCOMD)** is principally concerned with **force generation**, utilising a single training continuum that unifies the majority of the Army's conventional individual and collective training. Its primary learning focus is the medium learning loop and doctrine development.
- **Special Operations Command (SOCOMD)** is a short learning loop organisation. It retains its extant mission and functions which include the responsibility to prepare, conduct mission rehearsal exercises and certify force elements for deployment on operations.
- **Headquarters 1st Division (HQ 1 DIV)** is primarily concerned with **force preparation**, conducting higher level collective training for directed missions and contingencies. Its principal learning focus is the short learning loop and the development of tactics, techniques and procedures for contemporary operations.

However, the Adaptive Army initiative is more than just a reorganisation. It aims to change the Army's cultural mindset and the way it operates. The Adaptive Army initiative is a **cultural realignment** designed to inculcate an **institutional culture of adaptation** at all levels of the Army. This will generate profound change in training, personnel management, knowledge management, learning cycles and, eventually, the Army's culture. To this end, the Adaptive Army initiative aims to make the Army a more effective organisation by:

- improving the Army's alignment with, and capacity to influence, the ADF's strategic and operational joint planning
- improving force generation and preparation while balancing operational commitments and contingency planning
- increasing the effectiveness and efficiency of training within the Army
- improving the linkage between resource inputs and collective training outputs within the Army's force generation and preparation continuum
- improving the quality and timeliness of information flows throughout the Army so as to enhance its adaptation mechanisms at all levels

The Adaptive Army initiative is an inter-linked series of measures designed to realise these goals and which boasts a number of key elements as illustrated in the diagram below.

REBALANCED C2 AND ARMY STRUCTURE

The most distinctive feature of the Adaptive Army initiative is the creation of an organisation and structure linked to different temporal adaptation cycles within the Army. The effectiveness of the new structure will be contingent on the rapid establishment of a seamless and highly evolved force generation (FORCOMD) and force preparation relationship (1 DIV) between the new commands. These commands will, in turn, establish a relationship with Headquarters Joint Operations Command (HQJOC) for the conduct of operational planning. AHQ will retain responsibility for the provision of advice on the sustainability of specific Army capabilities.
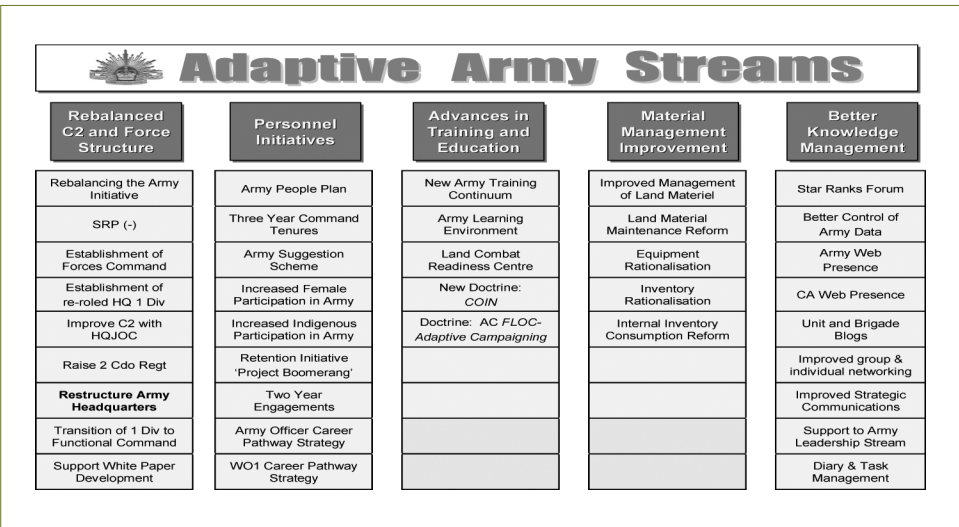
Figure 1. Adaptive Army Streams

These new arrangements will align the Army far more closely with extant ADF joint command arrangements, while facilitating the maintenance of foundation warfighting skills throughout the Army and the acquisition of mission-specific skills as required. All of these skills can now be clearly articulated and calibrated against commonly agreed measures. The degree of synchronisation between individual and collective training that can be achieved under this system is quite simply unprecedented.

Under the Adaptive Army initiative, **AHQ** has been restructured and now comprises two discrete divisions. The Deputy Chief of Army (DCA) Division oversees the Army's day-to-day business, looking ahead approximately eighteen months. The new Head Modernisation and Strategic Planning Division supervises the development of new capability and the introduction and integration of funded new capability.

FORCOMD, the newest—and largest—functional command, was raised on 1 July 2009. Training in FORCOMD will focus on generating forces that are competent in foundation warfighting skills. High-level warfighting training is the crucible that develops highly competent and professional leaders capable of functioning effectively under extraordinary pressure. This training also provides the best environment for the development of adaptation mechanisms at all levels. As such, warfighting skills are the *essential foundation* for all types of operations.

The fusion of existing organisations into FORCOMD will—for the first time—provide the Army with a single synchronised and integrated Army Training Continuum with objective assessment of individuals and force elements against clearly articulated standards endorsed by the Chief of Army. As a result, the process of force generation and preparation both for operations and less immediate contingencies will become far more coherent.

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1 DIV's key responsibility is **force preparation**—the training of conventional Army force elements in preparation for operations based on the requirements of Commander Joint Operations (CJOPS). This training will be supported by force preparation activities conducted by FORCOMD. These activities will focus on concentration, mission-specific training, mission rehearsal exercises, certification and post-operation demounting activities for deployed force elements. Like SOCOMD, 1 DIV is aligned to the shortest adaptation cycle and incorporates lessons from deployed forces into the preparation of those force elements that will immediately follow the deployed forces into an area of operations.

HQ 1 DIV will retain its capacity to deploy as a two-star joint headquarters and will work closely with CJOPS in the conduct of operational planning. COMD 1 DIV will be responsible for mounting all conventional operations conducted by Army force elements (less SOCOMD force elements) and will ensure their certification prior to deployment.

HQ 1 DIV will exercise technical control of all deployed Army force elements on behalf of the Chief of Army. This includes responsibility for the lessons learned cycle from those forces assigned to SOCOMD and other elements of the deployed or supporting force. This process is designed to facilitate the rapid feedback of lessons into the Army's learning cycles and to ensure the appropriate employment of deployed forces. HQ 1 DIV will also act as the re-entry point for force elements redeploying from operations.

One significant feature of the Adaptive Army initiative is the new Land Combat Readiness Command (LCRC), which was raised in December 2008. LCRC's role is to provide practised, ready and certified forces for specific operations and contingencies, as directed by CJOPS, to ensure the successful conduct of joint, combined and inter-agency operations. LCRC also conducts warfighting training to support the achievement of the Army's mission essential task requirements. LCRC supports COMD 1 DIV by coordinating higher level training and assessment so as to raise training standards across the Army. The mounting, assessment, certification and demounting of force elements will be standardised within this new organisation so as to maximise the Army's success on current and future operations.

The Special Operations Commander Australia (SOCAUST) retains his higher command relationships with the Chief of the Defence Force, Chief of Army and CJOPS. **SOCOMD** has allocated tactical command to CJOPS for special operations planning and conduct of campaigns, operations, joint and combined exercises and other directed activities. For domestic counter-terrorist and other sensitive strategic operations, SOCAUST maintains a direct relationship with the Chief of the Defence Force.

SOCOMD retains its responsibility to the Chief of Army for the force generation and force preparation of units assigned to CJOPS for the provision of a scalable headquarters with the flexibility to tailor size to operational requirement. SOCOMD will also ensure that its development of collective training standards and assessment against those standards aligns with the processes to be developed by FORCOMD.

One of the key drivers in the evolution of the Army's higher command links is the need to align these with changes in the ADF's joint operational command and control structures. The Chief of Army will continue to provide strategic planning advice to CJOPS; however, COMD 1 DIV will exercise technical control over assigned Army conventional force elements and remain under operational control of HQJOC for planning purposes.

PERSONNEL INITIATIVES

Fundamental to the success of the Adaptive Army initiative is the Army's ability to recruit, train, develop and retain high quality officers, soldiers and public servants. The Army's people must be better educated, better equipped to understand, embrace, lead, and exploit the opportunities offered by this complex environment. Significantly, the Army must ensure that its people are inculcated with a culture that fosters and encourages a flexible approach to solving complex problems.

The Army People Plan was released in May 2009 and complements the implementation of all elements of the Adaptive Army initiative by providing a workforce that is appropriately trained and educated—and the right size. The Army People Plan encompasses six strategic personnel themes, and all Army personnel initiatives will be reviewed and aligned with these themes, including those designed to enhance retention and to improve career management to provide the capacity and flexibility to support the Adaptive Army initiative.

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In the past six months the Army has developed a series of strategies known as the 'Army career pathways' which include the Army Senior Officer Career Pathway Strategy and the Army Officer Career Pathway Strategy. An Army Warrant Officer Career Pathway Strategy is also in the final stages of refinement. A three-year command directive has been introduced and innovative policies designed to improve retention are currently under development.

A comprehensive strategy for the career progression and development of officers is essential to provide maximum opportunity for these people to excel and achieve career aspirations. With a sustained high operational tempo, officers are required to respond to a wider range of command, leadership and management demands in a variety of challenging and dynamic environments. Ultimately, it is the ability to adapt to these operational demands that will ensure the long-term development, relevance and vitality of the officer corps and, in turn, of the Army.

For officers in particular, the paradigm of an Army career based on passing through 'gates' such as Staff College and sub-unit or unit command, does not boast the flexibility required under the Adaptive Army initiative. While development and command appointments remain an important part of the fabric of the Army, they can no longer constitute the sole means to ensure career progression. What is required is an enhanced career management paradigm with the agility to provide flexible career pathways that are not restricted to the traditional 'gates'.

The Army's career pathway strategies are based on a culture of positive career relationships and performance management, enhanced career development opportunities, and flexible career pathways. Ultimately these career pathway strategies will contribute significantly to creating leaders with the intellectual capacity to perform a diverse range of activities in an increasingly complex environment—and the ability to adapt effortlessly to dynamic and challenging scenarios.

The Australian Army will transition to three-year command tenures for unit command and formation command from January 2010, with two-year commands restricted to exceptional circumstances. This change in tenure also extends to all Regular and Reserve command appointments. This initiative will reduce the high formation and unit tempo that results from compressed training regimes and will also provide increased opportunity for commanders to consolidate their leadership and management skills. At the same time the change in length of tenure will ensure the continuity for a single command team to manage a full deployment cycle within a unit or formation, including pre-deployment, deployment and reconstitution.

> The Australian Army will transition to three-year command tenures for unit command and formation command from January 2010

The Army is currently exploring retention initiatives which are designed to increase individual periods of service by addressing the extrinsic and intrinsic expectations of its people, and through the effective use of all the available elements of the workforce. The recent Defence policy that extends retirement age to sixty, for example, provides tangible recognition of the fact that the Army cannot afford to lose valuable corporate knowledge five to eight years earlier than is necessary. Similarly, the Army recognises the need to space career milestones to allow such events as parental leave and civil schooling to occur between each promotion gate without detriment to the individual.

ENHANCED TRAINING AND EDUCATION

The Army's principal role is the organising, training and equipping of forces for operations and military contingencies. To achieve this, it must be able to plan and conduct effective individual and collective training. This training must be focused, progressive and simple. The Army's foundation warfighting skills form the elementary building blocks for the maintenance of high end warfighting skills.

Foundation warfighting training is the fundamental individual and collective training that underpins operational capability. This is the bedrock from which the Army adapts to meet its operational requirements and which equips force elements

to conduct the full spectrum of sustained operations. Training levels and standards are the means to assess the Army's training. Under the Adaptive Army initiative, this foundation warfighting capability will be delivered through the newly developed Army Training Continuum.

The Army Training Continuum commences with *ab initio* training and progresses through individual and collective training and force preparation to produce force elements that can conduct operations successfully. Training encompasses a combination of tasks performed to a standard, level, condition and frequency comprising individual and collective training. Significantly, the continuum will be overseen by a single command, thus ensuring that a unified approach to the conduct and assessment of training is implemented across the Army. The new Army Training Continuum was endorsed at the Chief of Army Senior Advisory Committee in June 2009 and was implemented on 1 July 2009 with the raising of FORCOMD.

Under the Adaptive Army initiative, the Australian Army aspires to be a true learning organisation in which shared, timely knowledge and flexible learning are accepted as the norm for individuals, teams and the organisation. The Army Learning Environment provides the framework within which this culture of adaptation will flourish, with learning viewed as an ongoing activity that occurs formally and informally at all levels of the organisation. The Army Learning Environment will be delivered through the Army Continuous Learning Process, which is structured along three lines of development: training and education, lessons integration, and the creation of an environment conducive to learning. This integrated Army Learning Environment will have been achieved when the Army boasts an environment characterised by the optimal conditions for learning and when the Army routinely converts lessons into learning in a relevant, effective and efficient manner.

Adaptive Campaigning – Future Land Operating Concept has recently been endorsed as the Army's new capstone document. This document builds on the Army's previous conceptual documents—

> *Adaptive Campaigning* will be transitioned rapidly and systematically into doctrine …

Complex Warfighting (2004) and *Adaptive Campaigning* (2006)—and is guided by the Adaptive Army initiative and the 2009 Defence White Paper. *Adaptive Campaigning* provides the conceptual and philosophical framework and force modernisation guidance for the Army to adapt to the complex challenges of future conflict. This document incorporates recent operational lessons and insights, current DSTO research, worldwide trends, and domestic and international developments. Most importantly, it describes the actions of an integrated joint land force within a broader joint, whole-of-government and inter-agency approach to the demands of complex war.

As well as providing force modernisation guidance, *Adaptive Campaigning* will be transitioned rapidly and systematically into doctrine, beginning with an update of the Army's counterinsurgency and peace support doctrine, both scheduled for re-release in 2009. To expedite the incorporation of enduring lessons into doctrine and training, the Army has devolved doctrine sponsorship to the respective training authorities, thereby allowing sponsor-endorsed lessons to be simultaneously incorporated into both doctrine and training.

MATERIEL MANAGEMENT

The Adaptive Army initiative foreshadows a change to the way that the Army views the ownership and use of land materiel. For some time, too much of the Army's equipment has been spread too thinly across the organisation and across maintenance systems that are not optimised to meet individual, collective and mission-specific training requirements. The Adaptive Army initiative now provides the necessary impetus to address equipment holdings in units versus loan and training pools, the inventory required to sustain existing capability and the maintenance system itself as one integrated materiel management system.

The Adaptive Army initiative will lead to the rationalisation of equipment within units to establish reliable loan and training pools—although greater use of loan and training pools to satisfy equipment utilisation priorities also harbours its own challenges including, for example, the lower level of operator maintenance that is traditionally experienced with loan equipment. The Army will also need to be far more deliberate in planning for the use of this equipment in training, resisting the urge to change training activities constantly with the consequent flow-on effects to other planned activities. To maximise flexibility in line with the Adaptive Army initiative, appropriately sized pools with set priorities that allow access to materiel as required must become the norm. Gaining support from enabling groups to assist in the holding and management of these pools on Army's behalf will also constitute a challenge.

Currently, the Army is working closely with the Defence Materiel Organisation (DMO)—the capability manager which manages all land materiel on behalf of the Chief of Army. Some of the materiel management reforms already underway in this area include a review of the inventory managed by DMO, a review of the performance measures and reporting under the Materiel Sustainment Agreements, a review of preventative maintenance regimes, and a repair pool trial for B vehicles. The review of the DMO inventory is aimed at optimising holdings against classifications that support the equipment life of type for both training and operational contingencies.

Within the Army itself, the manner in which materiel is consumed is also being reviewed in an effort to reduce the cost of ownership and allow reinvestment of funds to higher priority areas. The first tranche of this reform has commenced

with changes to the way the Army holds, issues and consumes combat clothing and personal field equipment. Simply put, the Army's consumable inventory is too large, increasing the governance burden within units and tying up resources that could be employed more profitably elsewhere.

In conjunction with DMO—and Joint Logistic Command which is responsible for the conduct of base repair—the Army is seeking to increase the maintenance capacity within units while, at the same time, reducing the maintenance burden. Supporting efforts to achieve this include the B vehicle repair pool trial, the review of preventative maintenance regimes, the renegotiation of supporting maintenance contracts, and a revised maintenance agenda to be implemented across the entire land materiel maintenance system. Because of the complexity of this system, tight coordination between the relevant groups is essential to ensure the increased operational availability of land materiel.

> Within the Army itself, the manner in which materiel is consumed is also being reviewed…

More efficient materiel management processes are being developed so as to reduce the cost of ownership and reinvest the savings in personnel and funds. The availability of land materiel will be increased through the reduction in unit equipment holdings and an expansion in the capacity of the maintenance system from unit level to the national support base. Initial guidance has been issued on improving inventory management within the Army and reducing the cost of ownership (CA Directive 20/08).

ARMY KNOWLEDGE MANAGEMENT

While the Adaptive Army initiative acknowledges that the Army's hierarchical structure remains crucial to its culture, it also highlights the fact that current and evolving technologies, appropriately identified, harnessed, applied and exploited, have the potential to empower both individuals and the chain of command. At its heart, adaptation balances the need to change as the situation evolves with a requirement to retain important corporate knowledge. What is difficult, however, is to ascertain what precisely must be retained from a corporate knowledge perspective. Achieving institutional agreement on this fine balance is apt to be more difficult still.

Knowledge management within the Army, as in many other large national and global organisations, is yet to be truly optimised. While the Army retains its institutional reputation for agility, responsiveness and reliability across an increasingly complex, ambiguous and diffuse operating environment, much of this strength is contingent on the quality of the Army's people and longstanding training regimes, as opposed to other less clearly definable essentials such as the management of knowledge.

In future, the enduring strengths of the Army must be enhanced by an equally agile, reliable and responsive system for knowledge management, for the longer term and mutual benefit of both commanders and soldiers. The optimal confluence of these three pillars—people, training and knowledge management—will contribute significantly to the realisation of a truly adaptable army for the twenty-first century.

The Adaptive Army initiative recognises both the significance of the Army's hierarchical structures and the imperative for technology to augment and complement these in the future. The Army's approach to knowledge manage-ment is to view it as of enduring importance.

> The Adaptive Army initiative is founded on the Army's hard-won lessons over the last decade …

Implementation of an optimised and flexible management regime aligned to existing and relevant Army structures, processes and corporate knowledge will empower all the Army's people wherever they are placed in the chain of command.

CONCLUSION

The Adaptive Army initiative is founded on the Army's hard-won lessons over the last decade—lessons on operations, force generation, joint interaction and the process of adaptation. At the same time, the implementation of the Adaptive Army initiative is itself a learning process. As lessons are learned during implementation, the Army will adjust and adapt based on those lessons. This will require leaders at all levels to work towards the common goals described in this article, while also exercising and fostering initiative and innovation in their soldiers.

While much remains to be done, significant progress has been made in the five streams of the Adaptive Army initiative since August 2008. The Army has conducted a stringent internal process including war games, seminars and back-briefs to support the implementation of the Chief of Army's directive. Although the Adaptive Army initiative was not dependent on the Defence White Paper, its implementation is closely aligned so as to equip the government to make cost-effective decisions on military capabilities. Ultimately, however, the success or failure of this initiative rests with the operational requirements of the ADF:

> Adaptive Army will be successful if it aligns the outputs of Army's force planning, force generation and force preparation with the joint strategic and operational requirements of the ADF, efficiently and effectively.

This is a worthy aspiration, and one that will require significant progress in each of the five streams of the Adaptive Army initiative over the next twelve months.

Inefficiencies and unnecessary duplication of effort will only be removed through vigorous action.

The Adaptive Army initiative is a fundamental change to the structure of the Australian Army and the way it conducts its core business. It aims to better organise force elements to deal with the ADF's evolved command and control structures, more efficiently conduct force generation and preparation, and simultaneously master the different learning loops that enhance the Army's capacity to adapt.

The last decade has challenged the Army's conduct of its core role—the raising, training and sustainment of land forces for operations. In meeting the challenge on each occasion, valuable lessons have been learned that can be exploited to generate and prepare land forces more effectively for future operations. The implementation of the new command structures, supported by the Army Training Continuum, provides a foundation for subsequent activities to enhance force generation and preparation.

At the end of the day, I seek to inculcate a culture of adaptation within the Army. While as individuals we possess a remarkable ability to adapt, in an institutional sense, the Army does not. The cultural issues inherent in such a dramatic change cannot be managed by simply drawing a new organisational chart—these issues will only be managed through determined leadership and advocacy by leaders at all levels. The Army needs to be agile in its approach to operations, and ready to adapt to a changing world—significantly, this is also the means to create a culture that encourages innovation and creativity.

The Adaptive Army initiative will ensure that the Army is better positioned to contribute to the conduct of joint operations in a manner that balances extant commitments with preparations for future contingencies. Quite simply, the Adaptive Army initiative will result in a more effective Army, and one that is well positioned to transition to the Army After Next in the coming decades.

MEASURING SUCCESS AND FAILURE IN AN 'ADAPTIVE' ARMY

LIEUTENANT COLONEL MICK RYAN

ABSTRACT

In 2008, the Australian Army launched its Adaptive Army initiative, an ambitious program that seeks not only to pursue a systemic approach to adaptation, but also to inculcate a *culture of adaptation* across all levels of the Army. Much of the success of this initiative will be contingent on the Army's ability to monitor the progress of implementation and adjust—*adapt*—where necessary. That process of monitoring and adjusting requires clear measures of success and failure. This article analyses those measures, examining the way in which they can be employed to assess the implementation of the Adaptive Army initiative and how the aims of that initiative should be adapted in turn to suit an evolving situation.

INTRODUCTION

The Australian Army launched its groundbreaking Adaptive Army initiative in 2008. Far more than just a restructure of higher command and control arrangements, the Adaptive Army initiative pursues a systemic approach to adaptation across all levels of the Army. Under this far-reaching initiative, management of the Army workforce, materiel and knowledge will be enhanced significantly, as will the conduct of education and training across the organisation.[1] This is an ambitious undertaking which aims to instil a culture of adaptation across all levels of the Army.

The central logic of the Adaptive Army initiative is simple: if land forces are to demonstrate adaptability *during* operations (and effectively use 'adaptive campaigning'), that culture of adaptation must be inculcated *prior* to the conduct of operations. This culture of adaptation must pervade the organisation so as to underpin the generation and preparation of land forces and provide a foundation for 'adaptive campaigning'.

Monitoring the process of implementation of the Adaptive Army initiative and adjusting that process where necessary is also crucial, and requires clear measures of success and failure. This article seeks to examine why measures of success and failure are such an important driver in the success of the Adaptive Army initiative. Applying the culture of adaptation to these measures of success and failure in turn is also of primary concern and will be addressed in the latter stages of this discussion.

'COMPLEX ADAPTIVE SYSTEMS' AND ADAPTATION

Fully exploiting the ability to adapt is necessarily based on a clear understanding of its essential elements, what drives its success or failure, its design parameters and its framework of measures.[2] The Adaptive Army initiative is founded on the detailed study of adaptation and 'complex adaptive systems' by Defence (particularly DSTO and Army) over the past five years. Adaptation is a potent ability that is evident in many diverse biological systems. Darwin's work on evolution featured some of the earliest research into the science of adaptation and, for many years, the study of adaptation remained primarily restricted to the field of biology.

In recent decades, however, research into adaptation has moved beyond the natural sciences and is now applied to a broad range of societal endeavours. In particular, the study of adaptation has been influential in the examination of the optimum organisation of societies, businesses and other collectives to enhance their chances of success in dynamic environments. Such research has demonstrated that the process of adaptation underpins human learning, the development of societies, organisations and cultures, and complex problem-solving. The burgeoning interest in adaptation in recent years runs parallel to developments in the scientific field of complexity.

The science of complexity has become firmly established as an important field of study over the last decade. There are two key reasons for this. First, it offers a framework for examining complex issues that provides richer insights than traditional reductionist approaches. While the reductionist approach has enormous application in complicated mechanical systems where linkages can be clearly observed, it is less useful in the study of complex human or biological systems because of their inherently complex nature. Second, the study of complexity has very broad application. It has been used in fields as diverse as climate change, education, economics, air traffic control and biology.

As the examination of adaptation has broadened and the understanding of complexity has deepened, what has become apparent is that these two fields are inextricably linked.[3] This is clearly demonstrated in the burgeoning study of complex adaptive systems and their implications. A defining characteristic of all complex adaptive systems is their capacity to change composition and/or behaviour to improve their fitness for the environment they occupy.

The study of complex adaptive systems is also remarkably relevant to military organisations. Indeed, land combat, as one author noted, *is a complex adaptive system*. Combat is essentially 'a nonlinear dynamical system composed of many interacting semi-autonomous and hierarchically organized agents continuously adapting to a changing environment'.[4] This continuous adaptation is particularly apparent in any study of the full spectrum of military endeavour and the way in which military organisations must constantly adapt to remain successful in an environment that changes continuously.

Military organisations are complex systems that possess a range of human and technological potential for action. They must operate in multifaceted environments that contain many other complex systems—including the government that funds and directs their activities and the adversaries that seek to deny their goals. To retain their capacity for success in such an environment, military organisations have constantly fought to be innovative. It is only recently, however, that a detailed examination of the application of adaptation to military organisations and their operations has been undertaken.

Within the broad range of literature related to complex adaptive systems and adaptation, the key elements of adaptation are defined as:

- the capacity to gain and sustain environmental awareness of the system (agents, populations and relationships) in which one exists and seeks to be successful
- a notion of fitness for that environment
- the capacity to make changes (at different time scales and organisational levels) based on environmental understanding and notions of fitness
- the capacity to retain and encode useful information that improves success (corporate knowledge)

- the ability to measure the success and failure of actions in moving towards this definition of fitness which leads to further change in actions, objectives and notions of suitability.

Defining the key elements of adaptation is critical to any understanding of precisely what adaptation is. These elements are also useful in framing what measures of success and failure may be required and the level of detail necessary. Adaptation is a surprisingly conservative process. It is as much about what to retain (those elements that are successful) as it is about what needs to change. The study of adaptation and complex systems was applied throughout the development of the Adaptive Army initiative for a number of highly pertinent reasons.

> Defining the key elements of adaptation is critical to any understanding of precisely what adaptation is.

First, exploiting adaptation is the most effective way to address the challenges of complexity. The environment in which contemporary operations are conducted—and thus for which forces are prepared—is constantly changing, and the different interactions at different levels that characterise this change are too many and varied to accurately monitor. Second, using an approach geared to adaptation allows the Army to manage these complexities better, because adaptation does not rely on perfect situational awareness. Because of the iterative nature of adaptation (illustrated in the adaptation cycle below), an approach based on constant adaptation allows the Army to test a strategy, evaluate the outcome, modify if required and then repeat the process. The development of perfect plans or solutions in advance is not required—the Army can grow its strategies and solutions in a systemic fashion to suit the changing environment.

Finally, whether adaptation becomes the Army's watchword or not, it will certainly be exploited by others—not necessarily adversaries. Allies and partners from other government agencies (even contractors) will all be moving through their own cycles of adaptation—consciously or otherwise. The Army has no choice but to embrace adaptation—and *win the adaptation battle*—in order to meet the other actors in the environments it occupies on equal terms.[5]

GOALS OF THE ADAPTIVE ARMY INITIATIVE

The development of the Adaptive Army initiative spawned a number of supporting goals which were nurtured and adapted as required. These goals provided yardsticks for ongoing assessment of the extent to which the Army has achieved its aim in restructuring its functional commands. The supporting goals also maintain
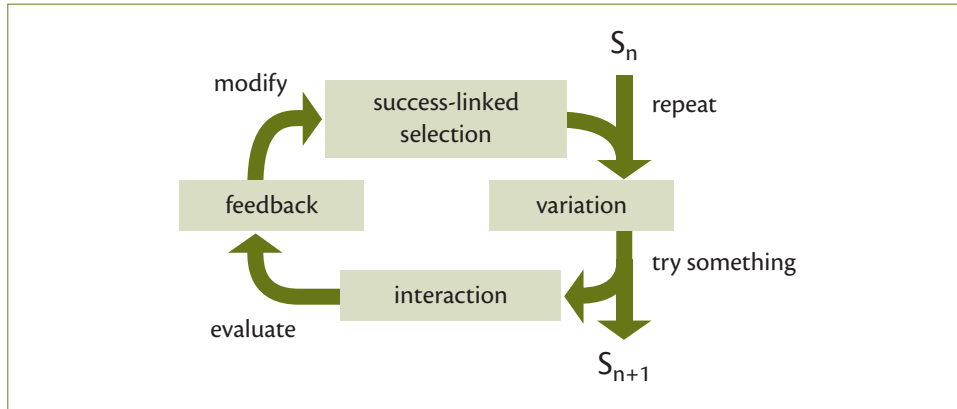
Figure 1. The adaptation cycle[6]

understanding of, and focus on, the Army's aspirations to guide continuing adaptation and development. The Adaptive Army initiative was launched with five objectives:

- to improve the Army's alignment with, and capacity to influence, the ADF's strategic and operational joint planning
- to improve force generation and preparation while balancing operational commitments and contingency planning
- to increase the effectiveness and efficiency of training within the Army through the development of the integrated Army Training Continuum
- to improve the linkage between resource inputs and collective training outputs within the Army's force generation and preparation continuum
- to improve the quality and timeliness of information flows throughout the Army so as to enhance the Army's adaptation mechanisms at all levels

These objectives provide a start point for measuring the effectiveness or otherwise of the Adaptive Army initiative.

… whether adaptation becomes the Army's watchword or not, it will certainly be exploited by others …

MEASURING SUCCESS AND FAILURE

The ability to measure success and failure in moving towards definitions of fitness is one of the key elements of an organisation that possesses the ability to adapt. The employment of measures of effectiveness is not new—such measures are used

continuously, both explicitly and implicitly, in the military, industry, academia and in other areas of society. Measures of effectiveness are most often associated with ensuring success. In the current and future military climate, however, measures of success will be required in a more dynamic environment where full situational awareness may not be possible, and goals will be constantly adapted to ensure that the organisation retains its fitness for the surrounding environment.

In a complex environment, the key definers of success will also be heavily influenced by scale and timeframes. This provides an additional complication and implies that measures of success must be designed around the different scales that are applicable (for the Army that means the different levels of command) as well as the relevant—and often varying—timeframes. So, in an approach that is character-ised by adaptability, not only must success itself be measured, but those measures of success—for different scales and timeframes—must also be subject to adaptation as the surrounding environment changes.

Key considerations in establishing measures of success are likely to include:

- measuring the speed of the Army's ability to adapt to its environment and its capacity to replace capabilities of lower or declining fitness with those that are better suited to that environment
- the inherent capacity to protect useful capabilities; that is, the ability to retain corporate knowledge that sustains or improves performance
- the ability to influence the surrounding environment (for example, Defence or government) to maintain or improve its fitness locally, or foster the emergence of habitable regions elsewhere.[7]

While the need to measure success may seem obvious, the importance of measuring *failure* is less apparent. In describing a set of strategic goals, enunciating the important mistakes that could mar the way to these goals is often a distant afterthought. In the implementation of the Adaptive Army initiative, aspirations should focus not only on success; a level of preoccupation with the potentially large and (mostly) small failures within the organisation is also necessary. Any implementation of the Adaptive Army initiative must articulate failure—and measures for its detection. For this reason, it is worth exploring why measuring failure is important and the ideal means of its measurement.

> While the need to measure success may seem obvious, the importance of measuring *failure* is less apparent.

Recent examination of the performance of complex systems suggests that organi-sations that are at increased risk of high impact failures (such as aircraft carriers, air traffic control systems and nuclear power plants) have developed methods that allow them to cope with complexity better than most other organisations. These

types of organisations are known as 'high reliability organisations' because they can operate in highly complex environments and yet have fewer accidents than is the case across other industries. These organisations are characterised by a *preoccupation with failure*, and are structured so as to recognise aberration and to intercept and arrest the development of the factors that contribute to failure.[8]

A veritable menu of failure mechanisms for complex systems is presented in the literature that covers this topic. Cohen and Gooch, Dixon, Naveh, Hughes-Wilson, Knox and Murray, and Horne have all documented military failures and the factors behind these disasters.[9] While these examinations of failure centre on military operations, other authors such as Dietrich Dörner have analysed systemic failure through a broader range of activity.[10]

Dörner's examination of the dynamics of systems failures and the reasons for the failure of individuals and organisations operating within complex systems led him to identify a series of common characteristics. These characteristics—complexity, internal dynamics, in-transparency and incomplete/incorrect understanding of the situation—all have an impact on the success or failure of systems.[11] While the reasons for failure within specific systems often vary, they almost always comprise a combination of the following: the inability to manage time, difficulty in evaluating exponentially developing processes, and flawed assessment of side effects and long-term repercussions.[12]

Cohen and Gooch have mapped significant military failures over the last century, producing failure matrices which identify the critical pathways to misfortune and disaster.[13] In seeking to adopt a more systemic approach to their analysis of failure, Cohen and Gooch categorise failure as either *simple failure* or *complex failure*. A simple failure results from one error or shortcoming, while complex failure involves more than one form of error.[14] On this basis, they define the three types of errors that can result in either simple or complex failure: failure to learn, failure to anticipate, and failure to adapt.[15]

Another to have examined failure in the context of complex adaptive systems is Dr Anne-Marie Grisogono. Grisogono explored the reasons that organisations fail despite the presence of processes that allow adaptation,

> There is a significant body of continuing research into failure, failure recognition and failure prevention.

commenting that 'adaptation does not even guarantee transient success'.[16] She noted three key measures of failure in the processes of adaptation—measures that are relevant at both the individual and organisational levels: loss of agility through over-specialisation or lack of diversity; loss of useful knowledge (or corporate knowledge); and acting to reduce the habitability of the environment either locally or elsewhere such as prioritising short-term gains over longer term consequences.[17]

There is a significant body of continuing research into failure, failure recognition and failure prevention. This research provides the Army an opportunity to exploit the extant knowledge of failure, combined with measures of success, in order to assess the implementation of the Adaptive Army initiative. The strategic changes that are at the core of the initiative must be implemented with a clear view of what constitutes success and failure—as measured against the overall goals of the initiative. These measures of success and failure must be constructed for easy accessibility by a large percentage of the workforce and, significantly, the longevity of these measures also must be assured.

PRINCIPLES FOR BUILDING MEASURES OF SUCCESS AND FAILURE

The Army's approach to building measures of success and failure will determine whether feedback mechanisms can assess the achievement of goals in retrospect and whether future goals need to be adapted. The construction of measures of success and failure for the Adaptive Army initiative must be based on five discrete principles drawn from the Army's knowledge of complex adaptive systems and adaptation.

Principle 1 – Linkage. The measures must be 'linked'. First and foremost, the Adaptive Army initiative must possess clearly defined goals. Any measures of success and failure must then be linked to these goals. The study of complex adaptive systems indicates that no action occurs in total isolation; thus, clear linkages between the different goals and measures are essential. However, the linkages should also be designed to allow the adaptation of these goals as implementation progresses.

Additionally, the measures must be linked to the measures of other organisations—under the Adaptive Army initiative, measures of success and failure cannot stand alone. For them to be relevant in a complex organisation—which is linked to other services, the Australian Defence Organisation and other departments—the measures must be linked to measures of success and failure for other outputs across the Army, Defence and government.

Principle 2 – Simplicity. The need for, and use of, measures of success and failure must be widely understood within the Army. It would be a mistake to assume that every individual automatically appreciates the rationale for measuring success and failure. The Army must provide clear guidance on the rationale for the measurement of success and failure within the Adaptive Army initiative, and a simple explanation of the implementation of these measures. This explanation should employ a plain, concise lexicon and be communicated using various media such as directives and web blogs. A short, focused package that is widely distributed for this purpose may be another effective means of dissemination. These measures of success and failure should also gravitate to a wider use for a broader range of Army activities.

Principle 3 – Feasibility. The measures must be pragmatic and feasible. This is a logical consequence of Principle 2. If the measures are complicated and not clearly linked to the Adaptive Army initiative, they will be used sporadically at best. Thus these measures must be accessible to a broad swathe of the Army workforce—both uniformed and civilian. They should be described in simple, accessible language without resort to an overly academic and complicated lexicon.

A simple explanation of these measures will also ensure a broader understanding of their usage, a wider employment, and the longevity of their application. Additionally, the measures must be feasible and practical. Broad, sweeping visions will be of no material use if it is impos-sible to measure the effectiveness of their implementation. The measures must be set against quantifiable outcomes and should support clear assessments of whether goals have been met or whether they will be met in the future.

> Broad, sweeping visions will be of no material use if it is impossible to measure the effectiveness of their implementation.

Principle 4 – Scalability. There must be different measures at different scales. For these measures to be widely applicable across the Army there must be different measures for the different scales (or levels of command) within the Army. Setting the correct quantity of levels, however, may involve a delicate balancing act. If measures are employed in too few levels, the quality of feedback will be poor. If measures are developed for too many levels, the process of measuring success and failure may become overly complex and tend towards over-centralisation.

As the examination of failure indicates, maintaining a narrow focus is likely to result in an inability to recognise failure in the scales that are not measured, leading to system failure. For the purposes of the Adaptive Army initiative, measures of success and failure should focus initially on three levels of command: army, command and formation.

- **Army level.** Measuring success and failure at the Army level involves an assess-ment of effectiveness at the 'endeavour' level. This will demand the definition of overall measures of success and failure for the implementation of the Adaptive Army initiative, for the design of the right force generation and preparation processes, and their gradual refinement both as required by the developing circumstances and a growing understanding of the situation. Importantly, at this level there must be some recognition of the fact that the Army is not an 'island'. The endeavour level's actions will have an impact on other services and groups within Defence and, eventually, on other government departments. The endeavour level must therefore be linked to the measures of other endeavours (see Principle 1 for more on this series of linkages).

- **Functional command level.** The functional command level is the linkage between the strategic planning undertaken by Army Headquarters and the tactical implementation of the Adaptive Army initiative. Given the critical role that these 'link' headquarters play, measuring success and failure at this level will be an important part of determining the success of the entire initiative. In particular, it is at this level that patterns will first appear in the aggregation of the results of measurement at the next level down. These patterns will provide the first indications of whether goals are being (or will be) met, thus allowing decisions to be made to adapt approaches or goals at the Army level.

- **Formation level (and below).** This level encompasses the measurement of everyday tasks in the conduct of individual and collective training, as well as force preparation activities. A large proportion of measurement will be undertaken at this level and thus it is vital that Army personnel at formation level understand the methods and rationale of measuring success and failure. Measurement at this level will focus primarily on retrospective assessment, with the aggregation of that data at the next level up facilitating analysis to assess progress towards the achievement of goals in the future.

> … it is vital that Army personnel at formation level understand the methods and rationale of measuring success and failure.

Principle 5 – Temporal applicability. There must be different measures for different timeframes. Alongside achieving the correct balance in scales (see Principle 4), sits a need to balance measures for different timeframes. As the examination of failure indicates, an over-focus on short-term gains often leads to systems failure. Thus the measures must balance short-term results with measurement of long-term outcomes. The consideration of timeframes will also involve the requirement to balance measurement of what has already occurred (using lagging indicators) with measurement of the trajectory towards future achievement of goals (using leading indicators).

These principles are designed to influence the development of measures of success and failure for the Adaptive Army initiative at various levels within the Army. As each level of command possesses superior awareness of its situation, that level must be responsible for the development of measures of success and failure. Once the implementation of these measures commences, every level of command must also continue to monitor its environment to ensure that the measures remain suited to the ongoing implementation of the Adaptive Army initiative. This will require the ongoing adaptation of measures of success and failure to ensure they remain appropriate to the process of institutional change within the Army. This process of

measuring success and failure, and the periodic re-assessment of those measures, should be incorporated into the everyday business of formations and commands.

WIDER APPLICATION

While this article has focused primarily on the application of measures of success and failure for the Adaptive Army initiative, these measures are also applicable across a range of strategic endeavours. For example, these principles could be employed in developing measures of success and failure in the implementation of the recently released Defence White Paper or within the broader government and business communities.

Additionally, these principles could be applied to the conduct of contemporary operations. This is particularly relevant as these measures are inherently human-centric—they are about measuring the success or failure of human activity. Given the character of the current *wars among the people*, the application of the principles contained in this article extends well beyond the boundaries of the organisation.

CONCLUSION

The use of measures of success and failure in the implementation of the Adaptive Army initiative will enhance the Army's chances of achieving the stated goals of this far-reaching initiative. Since the launch of this initiative in August 2008, there have been multiple indications that it is progressing smoothly (such as the establishment of new formations and commands) despite the lack of a formal tool to assess whether these will be more effective than their predecessor organisations.

The principles described in this article offer a pragmatic and transparent means of measuring whether the Adaptive Army initiative achieves its stated goals. Additionally, the construction of measures of success and failure offers a method of demonstrating the benefits of change to the wider Army workforce while, at the same time, providing ample evidence of the enhanced effectiveness of the Army *because* of those changes.

ENDNOTES

1   The full scope of the Adaptive Army initiative is described in *Adaptive Army – An Update on the Implementation of the Adaptive Army Initiative*, Department of Defence, Canberra, 7 May 2009.
2   Presentation to the Chief of Army by Dr Anne-Marie Grisogono, 10 February 2009.
3   A Grisogono, 'Success and Failure in Adaptation', paper presented to the New England Complex Systems Institute Conference, 2006, p. 1.

4   A Ilachinski, *Land Warfare and Complexity, Part II: An Assessment of the Applicability of Nonlinear Dynamics and Complex Systems Theory to the Study of Land Warfare*, Center for Naval Analyses CRM 96-68, July 1996, p. 3.

5   Based on the work of Dr Anne-Marie Grisogono.

6   Grisogono presentation, 10 February 2009.

7   Ibid.

8   K E Weick and K M Sutcliffe, *Managing the Unexpected: Assuring High Performance in an Age of Complexity*, Jossey-Bass, San Francisco, 2001, p. 3.

9   E Cohen and J Gooch, *Military Misfortunes: The Anatomy of Failure in War*, Vintage Books, New York, 1991; N Dixon, *On the Psychology of Military Incompetence*, Pimlico, London, 1976; S Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory*, Frank Cass, London, 1997; J Hughes-Wilson, *Military Intelligence Blunders*, Carroll & Graf Publishers, 2000; M Knox and W Murray, *The Dynamics of Military Revolution 1300–2050*, Cambridge University Press, Cambridge, 2001; A Horne, *To Lose a Battle: France 1940*, Little Brown and Company, Boston, 1969; A Horne, *The Price of Glory: Verdun 1916*, unabridged edition, Penguin Books, London, 1993.

10   D Dörner, *The Logic of Failure: Recognizing and Avoiding Error in Complex Situations*, Perseus Books, Cambridge, 1989.

11   Ibid., p. 37.

12   Ibid., pp. 34–35.

13   Cohen and Gooch, *Military Misfortunes*, pp. 54–55.

14   Ibid., pp. 24–26.

15   Ibid., p. 26.

16   Grisogono, 'Success and Failure in Adaptation', p. 2.

17   Ibid., p. 7.

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ADAPTIVE CAMPAIGNING AND THE NEED TO EMPOWER OUR JUNIOR LEADERS TO DELIVER THE 'I'M AN AUSTRALIAN SOLDIER' INITIATIVE

A CONTINUING CHALLENGE FOR THE COMMANDER AND THE RSM

WARRANT OFFICER CLASS ONE DAVID ASHLEY

ABSTRACT

The complexity of the future battlespace will consistently require more and more from our junior leaders. The more is our junior leader's ability to apply their leadership and skills across all Five Lines of Operation and to transition very quickly between them as required by *Adaptive Campaigning*. This means they must fully commit to prevailing in one line while thinking about the next. More so than ever we must be aware of the need to shape and develop our people.

*A*daptive Campaigning – Future Land Operating Concept* requires Army to excel at the grassroots level. Joint Land Combat, and to a large extent each of *Adaptive Campaigning*'s Five Lines of Operation, requires effective application of leadership and skills at the minor tactical level. This level is the domain of our junior leaders—our lieutenants, sergeants and corporals. Their foundation is to be an *expert in close combat* supported by being *brilliant at the basics*. Our junior leaders and soldiers often misunderstand this primary core behaviour. A truck driver may not need to be able to participate in a deliberate attack against a fortified enemy as an Infantryman, but they must be able to defend themselves and operate their vehicle in the close combat environment.

To meet this challenge, our junior leadership needs an intuitive and well developed understanding of their own and their team's contribution to *Adaptive Campaigning*. They need to develop within an environment, set by the unit command team, which trains, supports and resources them to empower junior leaders to contribute fully to success in our future operating battlespace. An important component of this environment is that command teams at all levels must also exemplify the behaviours we expect from our junior leaders and their soldiers.

Army's history is full of examples of junior leaders seizing the initiative and winning the day. These examples provide ample evidence that the application of the Adaptation Cycle—Act, Sense, Decide and Adapt—can come naturally to our junior leaders if they are properly and effectively trained and prepared. It is the cumulative, and often concurrent, effect of many such efforts that win in battle and create success on operations. Without the dynamic input of our junior leaders and their soldiers we may flounder and even fail. There is no second place in war and, therefore, such failure is unthinkable.

The need to develop, support, resource and *empower* our junior leaders remains a continuing challenge for commanders and their RSMs, particularly as the characteristics of the battlespace become ever more complex. By training and then *trusting* our junior leaders to think and act for themselves, or

> … every soldier is a leader.

applying the Adaptation Cycle at the minor tactical level, and then demanding that they meet the requirements of Army's core behaviours, we will prevail in the grassroots of *Adaptive Campaigning*. We will achieve this by enabling our junior leaders to lead effectively in the most complex warfighting environments. This is essential for success in our future operating environment. Through this development, commanders and their RSMs will inculcate a sense of mutual trust across unit leadership from corporal to colonel. This will have a mentoring effect on our soldiers, convincing them to accept leadership roles—*every soldier is a leader*. The unit will then be optimised as a cohesive team, able to meet the considerable challenges of success across all diverse Five Lines of Operations required in *Adaptive Campaigning*.

A commander is ultimately only as good and effective as the sum of his or her people. Training, supporting and empowering junior leadership to enable this cohesive team approach to success is, and will remain, crucial.

WHAT DO OUR JUNIOR LEADERS NEED TO MEET THEIR PART IN ADAPTIVE CAMPAIGNING?

The key to developing our junior leaders is, as much as possible, unfettered access to what is becoming one of our most important resources—time to train.

Our contemporary unit work environment is affected by conflicting demands on time. Corporate governance, mandatory training, administration and external support requirements all place demands on this resource. This, in some form, has always been a part of unit life and will remain so. Unit life today is busy and complicated. The challenge for commanders and their RSMs is to seek solutions to free up training time for junior leaders and, where possible, to quarantine them from administrative and support burdens not specific, or essential to, the leadership of their teams.

To maximise the use and effectiveness of training time, commanders must instil in their junior leaders the acceptance that they are not only required to lead their teams, but that the responsibility to train and meet the development and welfare demands of their soldiers also rests with them. The All Corps Soldier and the Officer Individual Training Continuums are perhaps world's best and are producing the framework for quality leaders. It is at the unit level, however, that these skills, knowledge and attitudes are consolidated and continually developed in the working environment. Commanders must give clear direction, set goals and provide support and resources, including providing the time to train. Commanders must establish effective and transparent unit mechanisms to supervise and validate training at every level and to contribute to our learning cycles.

This may be best achieved through a well crafted unit training directive, which is effectively communicated to all. This directive could be built around the requirement for activity debriefs and After Action Reviews at all levels, feeding a unit lessons mechanism that ensures continuous learning and development. A lesson for one should be a lesson for all—*every soldier committed to continuous learning and self development*. Our junior leaders' personal commitment to individual and team training and development should inform their Personnel Appraisal Report, and they should fully understand and accept this performance requirement. However, we must also establish a training environment that is understood to be permissive of error but not negligence. Our junior leaders and their soldiers must understand the difference.

Our training regime must reflect operations. It must provide elements of uncertainty matched with physical and mental stress, safeguarded by risk assessment and risk mitigation. There must be a requirement for courage in training—*every soldier physically tough, every soldier mentally prepared, and every soldier courageous*.

We must always trust our junior leaders, and their soldiers, to take action. My personal observation, from CTC Warfighter rotations, is that our people are prepared 'to do' in order to get the job done. They are normally prepared to take action in the absence of orders and directions. We must foster this—*every soldier takes the initiativ*e. Taking the initiative is an essential part of self discipline—the discipline that will hold us together in the modern battlespace. Our people must be able to constantly do what they know is right, without being told, to the best of their ability—and always have the courage to do so.

> We must always trust our junior leaders, and their soldiers, to take action.

I clearly remember each member of the section I commanded twenty-five years ago. We worked together with only minor change for twelve months and were able to develop a cohesive team to the point where a simple field signal resulted in my soldiers, good men all, acting in concert swiftly and efficiently. I was far from my unit's best junior leader and my soldiers far from the best trained, but our actions were slick, quick and effective. Today, our dynamic unit tempo and high personnel turnover emphasises the need for constant building and rebuilding of our small teams at the expense of team integrity. If it is agreed that effective adaptation is supported by small team cohesion, trust, willingness to change and *every soldier working for the team*, we must always consider ways to minimise disruption to our small teams.

Our recent operational history shows that either directly or indirectly, our soldiers have saved many more lives than they have taken. We should all be very proud of this fact. We are a compassionate Army full of compassionate people. Four of the Five Lines of Operations in *Adaptive Campaigning* require a level of compassion to succeed. I could argue that the fifth, Joint Land Combat, also requires a compassionate approach to minimise collateral damage and unnecessary suffering. A private soldier in 1 RAR once said, 'A few words and a helping hand can be the difference between having a nation's support or not.' He was very right. How can we achieve success and prevail without an inculcated mindset of demonstrating compassion? Demonstrated compassion leads to ethical and moral behaviour in battle and on operations—*every soldier demonstrates compassion*. Unit training programs must ensure that operational morals and ethics are included regularly.

In this short article I have articulated the need and benefit of instilling each of the nine core behaviours that underpin the 'I'm and Australian Soldier' initiative in

our unit training and the development of our junior leaders and soldiers. I ask the reader to imagine a unit where each of its members strives to meet each of these behaviours, through personal commitment, leadership and command support. The reader would fight to be the commander or RSM or complete their tenure satisfied that he or she had commanded or supported a special capability. The behaviours may be aspiring, but they are an aspiration well worth command commitment and effort. This commitment and effort will mark a path for us to be *brilliant at the basics* through real engaged leadership. An element of each of the nine core behaviours, and the junior leader-ship needed to meet them, should be included in as many training and development activities as possible. The behaviours should be a driver in the design and construction of unit training programs and personnel development.

> Demonstrated compassion leads to ethical and moral behaviour in battle and on operations …

Success in Joint Land Combat and *Adaptive Campaigning* is predicated on the effective application of the Adaptation Cycle, and the mental and physical inputs required to achieve it at the minor tactical level. This is the space occupied by our junior leaders—lieutenants, sergeants, corporals, and their soldiers who are the real human dimension of battle.

Train them, support them, trust them—and they will win our battles because they are *empowered*. Through this support, they will deliver the nine core behaviours that prevail in *Adaptive Campaigning*. For our commanders doing this now, you are doing absolutely the right thing.

Two initiatives that are relevant and support Adaptive Army are the Force Generation Cycle and the new Army Training Continuum. Both initiatives will harvest the very valuable resource of 'time to train'. Both provide, among other related initiatives, a new environment that allows us to remediate current shortfalls and better prepare for operations. Command at all levels must ensure that this valuable gain is carefully used and not wasted. We must invest a large portion of this harvested benefit where we most need it: preparing, supporting and developing our junior leaders and their soldiers to meet their part as adaptive campaigners.

In his foreword to *Adaptive Campaigning – Future Land Operating Concept 2009*, the Chief of Army describes the concept as 'the next step to truly realising an Adaptive Army'. Given the essential role our junior leaders and their soldiers have to succeed at the minor tactical level, *empowering* junior leaders through engaged leadership, command commitment and effort gives them ownership of Adaptive Army. Ownership of Adaptive Army from private to lieutenant general ensures 100% commitment for a smooth transition to a more effective and agile army.

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OODA VERSUS ASDA

METAPHORS AT WAR

JUSTIN KELLY AND MIKE BRENNAN

ABSTRACT

This articles examines the provenance and utility of two metaphors commonly used to help describe the dynamics of contemporary combat. It argues that, although it shares the weaknesses of all metaphors in being partially inappropriate and incomplete, the ASDA cycle has greater contemporary relevance than the earlier Boyd or OODA cycle.

In 2006, the first edition of the Australian Army's concept *Adaptive Campaigning,* capturing the lessons of nearly a decade of Army experimentation, introduced the 'Adaption' Cycle. The proposition made was that success in solving complex problems relied on progressive interaction with them and that this interaction could be described by iteration of the sequence: Act-Sense-Decide-Adapt, which was reduced to the acronym ASDA. Most conceptual abstractions pass through the alimentary canal of the Army without either providing nourishment or provoking an immune response, but ASDA has proven exceptional in this experience. Since its inception, the ASDA cycle has prompted an unexpectedly polarised response attracting both fierce proponents and opponents.

Taken broadly, two schools have emerged: the ASDA-ites and the OODA-ists, with the latter subscribing to the Observe-Orient-Decide-Act Cycle described by Colonel John Boyd of the USAF and proselytised by manoeuvre warfare enthusiasts in the 1980s. The Boyd Cycle has represented received wisdom for many years and has become a foundation of the way we think about tactics, spawning doctoral theses and many adornments. In its origin, it is a simple abstraction and so clearly reflective of reality that it has become axiomatic. Its success has spread beyond the military and, like Clausewitz and Sun Tzu, it has become something of a staple in the diet of business schools around the world.[1] Despite the authority enjoyed by OODA, the authors of this article remain firmly convinced of the righteousness of ASDA. Consequently, the purpose of this article is to explain ASDA's origins and importance so that others, who are not yet convinced, might be brought into the light.

Before proceeding, a word of caution is necessary. Both OODA and ASDA are metaphors: they are representations of some aspects of conflict that are incomplete and only partially appropriate. The practice of using metaphors to describe aspects of warfare is long and honourable. Sporting metaphors are presently disreputable, although sport is itself a metaphor for warfare, and scientific ones now have the upper hand. Clausewitz was a keen user of scientific metaphors and the dangers inherent in using them are exemplified by concepts such as the 'centre of gravity'. This was intended to help clarify a simple idea by reference to physics but discussion of it, its disassembly and adornment, has filled the arid wastes of staff college years ever since.

> Both OODA and ASDA are metaphors: they are representations of some aspects of conflict that are incomplete and only partially appropriate.

It is in the nature of the modern world that no good idea can be left unadorned. The processes that elevate, refine and adorn simple ideas bring employment to academics and military theorists and are often beneficial—at least to them—but there is a danger that the power and immediacy of the underlying ideas can be diluted or lost. This is especially true when dealing with metaphors and, for both OODA and ASDA, their simplicity and accessibility is their true strength. It would be wrong to try to stretch these metaphors to make them something they are not: comprehensive and accurate representations of warfare or the art of command.

THE BOYD CYCLE

The Boyd Cycle originated from a study of air-to-air combat in the Korean War and is well described by Frans Osinger[2] amongst others. In this conflict, the USAF enjoyed a 10:1 exchange ratio over the opposing air forces. This impressive result occurred

despite the superiority of the principal communist aircraft type (the MIG-15) over the F-86 which was the backbone of the US fighter fleet. The MIG could climb, accelerate and turn faster than the F-86 and, based simply on the characteristics of the airframe, should have been more competitive. Boyd's analysis concluded that the F-86, however, enjoyed two decisive advantages: it had a bubble cockpit affording excellent all-round vision when compared to that possible from the faired cockpit of the MIG, and its hydraulically assisted controls enabled it to transition between manoeuvres faster than its opponent. As a result the pilot of an F-86 was better able to perceive the three-dimensional arena of aerial combat, was therefore able to make better decisions, and having decided what to do could shift more quickly from manoeuvre to manoeuvre. So, although the MIG was arguably more competent within any single manoeuvre, the F-86 enjoyed marked superiority in any succession of manoeuvres.

From this platform Boyd developed the concept that combat involved successive cycles of Observation-Orientation-Decision-Action and that advantage accrued to the side that was able to achieve consistently faster cycle times. This was because the side with the faster cycle time set the conditions for the start of the next cycle; it had gained the initiative. If these start conditions were more favourable than those prevailing at the beginning of combat, and the advantage gained was developed through further cycles, the actions of the enemy began to lag further and further behind reality until they were sufficiently inappropriate as to create a fatal weakness.

> … we can see the Boyd Cycle in action everywhere from children's games to international relations.

Of course, while elegant, the Boyd Cycle did not describe anything that was new. Benjamin Whorf noted that language is not simply a reporting device for experience but its defining framework and, in this context, the Boyd Cycle provided to us the language to define what was already a shared experience. Having had it described to us, we can see the Boyd Cycle in action everywhere from children's games to international relations. Its power lies in its simplicity and familiarity.

Within the military, the Boyd Cycle has helped us understand the dynamics of historical battles and provided a framework that made otherwise abstract concepts—such as Liddell-Hart's ideas on manoeuvre for example—accessible. As a result, it provided the foundation for the manoeuvre warfare theory that arose to help Anglophone armies capture some of the fairy dust that made the Wehrmacht the model for industrial age prowess. For example, it helped explain why *auftragstaktik* was important, how 'surfaces and gaps' and 'reconnaissance pull' worked; and helped translate the Soviet concept of tempo into English, shifting it from the earlier idea of moving fast to the much more complete idea of cycling fast.

Despite these great strengths, the Boyd Cycle remains a necessarily incomplete and only partially appropriate description of conflict. This should not surprise us. Clausewitz, for example, took over 600 pages to describe the dynamics of war. Even if we make allowances for a good edit of *On War*, and the exclusion of the bits about defending swamps, we should not expect Boyd to achieve the same sophistication and completeness in a four-letter acronym.

For the purposes of describing contemporary conflict, the weaknesses of the Boyd Cycle lie in its origins. It grew from the observation of the specific case of aerial combat in Korea and has been extended to cover all of war, conflict, business and librarianship. The process of arguing from the specific to the general is induction. In formal logic this is fallacious but, more importantly, the further the argument is removed from its original context the more it relies on additions and elaborations to make sense of it.

Used to describe one-on-one aerial combat, the Boyd Cycle is a reasonable summary of the most important dynamics; but applied to Kursk, Kapyong, Tet or Baghdad, it becomes progressively less directly applicable without qualification or adornment.

> 'War is the realm of uncertainty; three quarters of the factors on which action is based are wrapped in a fog of greater or lesser uncertainty.'

For example, the simple act of observation is, especially in war, fraught with difficulty. Except in one-on-one combat in the air, there can be no certainty that all of the important elements of the situation are, or even can be, observed. As Clausewitz pointed out: 'War is the realm of uncertainty; three quarters of the factors on which action is based are wrapped in a fog of greater or lesser uncertainty.'[3] Of course, the failure or inability to observe all the critical factors influences the succeeding steps—only luck enables us to make good decisions on the basis of bad information. There is a role for the intuition, *coup d'oeil*, or experience that enables the observer to discern the patterns of regularity that enable the blank spaces to be at least partially sketched in. The interplay of these ideas is certainly not excluded by Boyd—but nor is it described by OODA.

Even if Observation proceeds smoothly, Orientation—understanding what it is that is being seen actually means—is not without its difficulties. Philosophy and psychology are professions dedicated to understanding understanding. Even when grappling with objective facts, each individual processes them in unique ways, combining cultural and social conditioning and precedent with the passions and aspirations of the moment to create idiosyncratic interpretations which may or may not be comprehensible to another bystander. Those readers who are married will understand this most clearly. This means that, in human interactions, there are no stable cause–effect relationships and individuals are prone to becoming victims

successively of the mendacity of hope or the hopelessness of despair. Again, these contingencies of observation do not invalidate Boyd, but to understand reality requires the study of other sources and other thinkers.

As well as this kind of problem with each step in the Boyd Cycle, there is the problem of managing the cycle as a whole. Warfare is more than the aggregation of one-on-one combats. Action does not build on action remorselessly and continuously, and is often suspended for various reasons. Chance, uncertainty, friction, danger, politics, perseverance and boldness … the list goes on, all play a part. Clausewitz for example, defined military genius in terms of an individual's ability to exert intellect, determination, judgment and courage both to discern what needed to be done and then to do it in the face of all the difficulties that the enemy and fate could place in his path. The Boyd Cycle can accommodate these layers of meaning, but to do so it needs to be read in conjunction with empiricist philosophy, theories of knowledge, military history and the rest. In short, the Boyd Cycle is not a theory of war; it is simply a metaphor which, like all metaphors, is an incomplete and only partially appropriate representation of the phenomenon it purports to characterise.

> Warfare is more than the aggregation of one-on-one combats.

THE ADAPTION CYCLE

The British general Rupert Smith coined the phrase 'war among the people' to highlight one of the defining trends underlying the evolution of warfare. Although wars have always been about seeking shifts in the distribution of political power, in the past this was done principally through winning the clash of arms in order to impose a peace on a belligerent state. Since the First World War, theorists have been seeking ways to achieve the desired political shift by acting directly on the population rather than through the intermediary of fielded armed forces. This 'new' theoretical approach was initially manifested in air power theories that saw strategic bombing campaigns intended to terrorise a population into acquiescence to a political proposition which was less unpalatable than the continuance of bombing. Through half a century of Cold War military academia, doctrine and practice this thinking subsequently flowed into the conceptual *cul de sac* of effects-based operations and the more fruitful directions described in the 1999 Chinese publication *Unrestricted Warfare*, the Australian Army's *Complex Warfighting*, followed by *Adaptive Campaigning* and Hoffman's *Hybrid Wars.* All of these attempt to strengthen the connection between the military actions envisaged and political shifts being sought. To this end, war is seen as imposing costs on, and offering benefits to, a belligerent population in order to cause them to withdraw their consent to continued resistance.

In this context, success in battle is likely to be essential but not, of itself, sufficient for victory. In the contemporary context, how you fight has assumed much greater importance because the unintended consequences of battle can provide strength to the enemy. This last point lies at the heart of Adaptive Campaigning.

As a conceptual snippet, the Adaption Cycle is no better than the Boyd Cycle and shares many of its weaknesses—it is, however, different in some important ways. In the next few paragraphs the sources of those differences and the reasons they are important will be explained but, at the outset it should be emphasised that the Adaption Cycle is not intended to replace the body of theory on which it rests. Like the Boyd Cycle, it is simply a metaphor for conflict—albeit one that emphasises certain aspects of conflict which are particularly important in our contemporary setting. In particular, ASDA takes a systems view.

> As a conceptual snippet, the Adaption Cycle is no better than the Boyd Cycle and shares many of its weaknesses …

The theory of Complex Adaptive Systems (CAS) is increasingly being used to describe the dynamics of war, and many other things (it is left as an exercise for the reader to decide if this is yet another metaphor or a more comprehensive descriptive theory). It is sufficient to note here that one is dealing with a system when:

- a set of units or elements are inter-connected so that changes in some elements or their relations produce changes in other parts of the system, and
- the entire system exhibits properties and behaviours that are different from those of the parts.[4]

Put simply, an adaptive system is one in which some or all the elements can change their usual behaviour in response to novel challenges. Because any new behaviour has an impact on the other elements of the system it, in turn, may develop new and previously unexpected behaviours of its own—which are called emergences. As a result of their ability to respond to circumstances, CAS are constantly evolving: they are dynamic. Ideally, this dynamism moves them towards some relatively stable state. However, because the relationships between the elements are nonlinear, tiny changes in the behaviour of a single element may cause huge changes in the behaviour of the system as a whole—hence the famous simile of a butterfly flapping its wings in Brazil causing a hurricane in the Caribbean. Therefore, occasionally CAS lose coherence and collapse into chaos. The more interconnections there are between the elements of a system, the more dynamic it is. The more elements there are in a system, the less predictable its total behaviour. War systems have a large number of elements that are intensively interconnected, which gives them extreme and unpredictable dynamism.[5]

It is not possible to learn about or understand a CAS except by interaction with it. To understand its dynamics it is necessarily to push or prod it sufficiently to trigger a response.[6] The range of responses is probably very broad and the relationship between the weight of the probing action and the vigour of the response will be uncertain and possibly disproportionate. CAS are therefore essentially unknowable by remote sensing. In the world of tactics, this characteristic impenetrability is reinforced by the tendency of forces to seek shelter from stand-off surveillance and precision attack by operating in urban or other complex terrain and in force packages that are beneath our detection threshold. This is the fundamental problem for today's tacticians. In the terms offered by the OODA Loop, you can OO at this problem until you are blue in the face and it will not help you understand it any better. A veil of uncertainty lies between the protagonists. To pierce it, and begin the process of learning, requires that a gambit be made—that sufficient energy be injected into the system to force it to respond.[7]

The necessary interaction, however, presents further complexities. By interaction, the system being prodded is joined with that of the prodder to create a new, much larger, more complex and more dynamic system. In a typical tactical encounter this new system might include: the immediate combatants, the many layers of their military organisations and the individuals that comprise them, their political organisations, their immediate families and larger ethnic groups, weather, terrain, and logistic and offensive support structures. Because of the presence of media there are multiple connections between the tactical encounter and the wider world which allows populations remote from the event to form a view on the tactical means applied and the costs being borne by the local population. This, in turn, will connect debates about the provenance or motivations for the war with events on the ground. Today, the systems engaged in a minor tactical encounter are as globalised as the Internet. This is why the 'strategic corporal' is strategic.

The way the enemy system responds to our pressure helps us understand it better but, critically, because of the new system that has emerged as a result of the present interaction, neither side is fully in control. The larger system will dynamically constrain or create opportunities and make actions productive or unproductive based on criteria that are not a part of the local tactical logic. As a result, both sides are riding a tiger and are forced to cobble together the next decision and action based on where it has taken them. The fight for the initiative, which remains critical and which is so clearly captured by Boyd, actually occurs in many places and at many levels, all of which are intimately connected and all of which need to

> Today, the systems engaged in a minor tactical encounter are as globalised as the Internet.

be acknowledged. The way we fight therefore should be modulated in accordance with the demands of the wider system. Winning remains essential, but winning well may be quite different from winning easily.[8]

The ASDA Cycle begins with 'Act' in order to capture the need to begin interacting— that is to highlight the need for *a bias for action*, despite having only a rudimentary understanding of the enemy system being faced. Surveillance and deep thought will most likely not provide useful knowledge unless they are teamed with positive actions to provoke a response from the enemy. Take, for example, a force that is looking at the outside of a village it has been tasked to clear. We used to rely on signature equipment and doctrinal templates to help colour in the missing pieces of the jigsaw but modern enemies, both regular and irregular, no longer work within templates. So, eventually someone has to move into the village in order to develop some knowledge of the enemy's strength, layout and scheme of manoeuvre. This person or group is a gambit and is being placed at risk—but it is an unavoidable risk.

> … modern enemies, both regular and irregular, no longer work within templates.

Given that a stationary force normally gets first shot at a moving one, we need to be prepared to absorb the first shot and respond to the information that we expect it to provide. This is the 'Sense' of the ASDA Cycle.[9] Importantly, as well as sensing what is happening at the point of contact, it is necessary to remember that we are trying to learn about the enemy's entire system both locally and more broadly. The intention is that by engaging all of the accessible elements of the enemy system, we can inhibit its functioning in order to allow us to progressively seize the initiative. This means that tactical encounters need to be characterised not as simply two forces grinding away at each other at the point of contact but as opportunities to learn about, and grapple with, much larger portions of the enemy's wider system.

Attempts to establish practical control over CAS are futile and the best that can be hoped for is to damp undesirable behaviours and reinforce desirable ones in order to sustain the system in an equilibrium band that is, if not acceptable, at least recognisable. In a recent article in *Military Review*, Wass de Czega described the difficulty of attempting to realise some idealised condition within the dynamism of real wars and compared the existing doctrinal approach of setting an objective and 'going for it', with

> the foundational discourses of the Confucian and Taoist east [which] do not frame life experience in terms of idealized ends or 'visions'. Chinese sages thought it impossible to know what an idealized end could be. They did not trust the mind to have a mirror-like

correspondence to external reality. Instead they thought that distinguishing 'better' from 'worse' was the best one could do. Life experience, in their eastern perspective, was a perpetual and ever changing flow of events. Intellectual energy, in flowing with the way of the world, should ideally focus on understanding the forces, tendencies, and propensities of the contextual situation. In their understanding, one harmonises with existence by enhancing the forces tending to flow toward 'better' while subtly diverting and blocking those tending toward 'worse'.[10]

Because of their indeterminate boundaries and the fact that we cannot control CAS, the Decide and Adapt steps of the ASDA Cycle seek to prompt decision-makers to take a mental step back from the immediate problem. As well as recognising the demands of the tactical battle, decisions need to accommodate both the higher-level system interactions and the need to acquire more knowledge and to deepen understanding. Modern combat can therefore be characterised as competitive learning in which all sides are constantly in a process of creating, testing and refining hypotheses about the nature of the reality of which they are a part. The resulting adaptations might need to be extensive, extending beyond forms of tactical action to possibly encompass previously sacrosanct areas such as the force's mission. The underlying premise being that the original mission, objectives and plan were based on conjecture about the enemy system's elements and internal relationships, and subsequent action will have modified the applicability of that conjecture.

> Modern combat can therefore be characterised as competitive learning …

Despite its many strengths, the ASDA Cycle is not without its weaknesses. The principal of these is that to work as intended it requires that individuals, fighting for their survival against highly competent and well-equipped enemies and in the face of chance, uncertainty and friction, be able to lift their heads (while keeping them down) and think big thoughts. Unless things can be arranged to facilitate such an objective view then, in practice, the ASDA Cycle will simply align with the limbic stimulus and response of the OODA Loop. Similarly, having placed people at risk in the initial gambit, there is no guarantee that this risk will generate the information being sought and the risk might need to be replicated at a number of places and times before useful knowledge can be developed. The only defence against this accusation is that at least it is more realistic than the OODA Loop's expectation of starting with actionable knowledge—in the air war of yesterday, this might have been a fair call but today, on the ground, it is not.

CONCLUSION

This article opened with the proposition that both OODA and ASDA are metaphors: representations of conflict that are incomplete and only partially appropriate; and that all they could hope to do was prompt a decision-maker to access a much deeper and wider body of theory. Because they both deal with war, they both rest on the same theoretical foundations. The differences between them are therefore ones of approach rather than understanding.

Indeed, the further one burrows into the underlying ideas, the greater convergence. For example, a close associate of Boyd's, summarised the essence of the Boyd Cycle Theory:

> In conflict, each participant, from the individual soldier trying to survive to the commander trying to shape strategy, must make decisions based on his orientation to reality—his appreciation of the external circumstances which he must act on. Boyd argued that one's orientation to the external world changes and evolves, because it is formed by a continuous interaction between his observations of unfolding external circumstances and his interior orientation processes that make sense of these circumstances. These interior process take two forms of activity: analysis (understanding the observations in the context of pre-existing patterns of knowledge) and synthesis (creating new patterns of knowledge when existing patterns do not permit the understanding needed to cope with novel circumstances).[11]

The analysis and synthesis described in this excerpt—the creation and testing of paradigms to arrive at new ones—reflects the hypothesis-test-refined hypothesis or model-test-model process that underpins ASDA suggesting that, at least in the view of Spinney, Boyd also saw conflict as a learning process. The fact that both OODA and ASDA stem from the same roots makes areas of overlap more substantive than areas of difference—which are principally ones of emphasis. Therefore, because metaphors are by definition incomplete and partially inappropriate, in deciding whether one is an OODA-ist or an ASDA-ite one should not look for 'right' or 'wrong' but rather whether the chosen metaphor emphasises the right things. Both OODA and ASDA are models of the

> Both OODA and ASDA are models of the 'problem' of conflict—neither proposes a solution.

'problem' of conflict—neither proposes a solution. Choosing between them should be based on which description of the problem is more likely to lead to appropriate solutions. That is, which metaphor is more likely to prompt decision-makers to search the right places in the underlying body of theory.

The OODA Loop is a powerful, accessible and widely applicable model of combat, whereas the ASDA Cycle is intended to capture systems thinking without resting on the jargon and formal analysis of systems theory. ASDA is deliberately couched to highlight the importance, and difficulty, of acting in the absence of actionable intelligence and the need to approach conflict as competitive learning. Depending on the importance the reader places on these emphases, the ASDA Cycle is either merely OODA but starting at 'A' instead of 'O', or is a novel and quite different metaphor for conflict.

Continued adherence to OODA will not necessarily and in all cases lead to military failure or irrelevance. If the underlying theory is understood, if a sufficiently broad perspective is attained and if the necessary adaptations are identified and made it may be possible, on occasion, to achieve a modest measure of success. Similarly, acknowledgment of the essential truth of ASDA does not guarantee success. However, because it describes the problem in a way that is particularly pertinent to contemporary conflicts, ASDA is at least prompting right-thinking.

When Army Headquarters coined it, the ASDA Cycle was intended to emphasise aspects of contemporary conflict that should trigger consequent changes in doctrine and training. The nature and importance of constant adaptation has since been recognised in a myriad of ways, and 'adaptation' and 'adaptive' are today's buzz-words. Because of its systems view, ASDA has begun to appear in US Army professional journals (although the USMC remain firm disciples of Boyd) and underpins current approaches to operational design. All this is good, but the current acceptance of ASDA should not obscure its limitations. It only has utility when combined with its underlying theory. One should think ASDA and read Clausewitz, Liddell-Hart, Fuller, Tukhachevsky, Isserson, Howard, Paret and Moltke.

This article was written as part of DSTO's Land Operations Division's investigation of the dynamics of the contemporary battle.

ENDNOTES

1   In researching this article it was discovered that Boyd has even penetrated the hurley-burley world of the librarian. See Karl Bridges, 'Boyd Cycle Theory in the Context of Non-Cooperative Games: Implications for Libraries', *Library Philosophy and Practice*, Vol. 6, No. 2, Spring 2004.

2   Frans Osinga, *Science Strategy and War: The Strategic Theory of John Boyd*, Abingdon, Routledge, 2007.

3   Carl von Clausewitz, *On War*, translated and edited by Michael Howard and Peter Paret, Princeton University Press, 1984.

4   Robert Jervis, 'Complex Systems: The Role of Interactions' in David S Alberts and Thomas J Czerwinski (eds), *Complexity, Global Politics, and National Security*, National Defense University Washington DC, 1997.

5   This is not a new view of war. Clausewitz described war as 'more than a true chameleon' because chameleons only change their skin colour, whereas war will change all the way to the bone. Beyond this, Clausewitz seems to argue that left to their own devices, wars would generally tend towards chaos instead of towards some form of stability.

6   During Operation GOODWOOD near Caen in France in July 1944, a British reconnaissance troop leader was tasked to investigate a village. In a demonstration of considerable personal courage he drove his scout car up the main street, turned around and drove back down it. He drew no fire. Consequently his parent unit drove past the village and was annihilated by the German forces occupying it. In the language of systems theory, the troop leader had interacted with the system but had not perturbed it enough to trigger a response.

7   This veil of uncertainty is demonstrated in practice. In contacts with bunker systems in Vietnam (a reasonable metaphor for urban combat) ground force casualties were concentrated into two identifiable spikes. The first occurred when contact was initially made and the individuals detecting the bunker complex were shot. Best practice at the time was to break contact and hit the (ill-defined) complex with all the indirect firepower that could be assembled. The second spike of casualties occurred when the ground force again advanced to the bunker complex and evaluated the effectiveness of the indirect fire by re-making contact.

8   This is not an attempt to trivialise the difficulties or dangers of combat but merely to state the theoretical demands that are being placed on today's soldiers. The 'strategic corporal' is made strategic through sensitivity to context and the ability to modulate his or her actions accordingly. This is a relatively new demand being placed on soldiers who may be fighting for their personal survival.

9   This was the basic premise underlying the decision to acquire the Abrams MBT. It was, and remains, the best available means of absorbing the first shot and developing the battle in contact. It is a response to the need to pierce the veil of uncertainty that separates us from regular and irregular enemies in complex terrain.

10   Brigadier General Huba Wass de Czege, 'Systemic Operational Design: Learning and Adapting in Complex Missions', *Military Review*, January/February 2009.

11   Franklin C Spinney, 'Genghis John', *Proceedings of the US Naval Institute*, July 1997, pp. 42–47.

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'FIXED, DETERMINED, INVIOLABLE'

MILITARY ORGANISATIONAL CULTURE AND ADAPTATION

LIEUTENANT COLONEL SCOTT WINTER

ABSTRACT

While organisational culture can act as an impediment to change, its relative conservatism plays an important role in guarding against change that may be ill-conceived and radical. The great strength of military culture, however, is that it is well suited to driving adaptation, particularly in time of war. Change within the military should therefore be seen as a process of adaptation and renewal, maintaining what has proven successful without being tied to tradition. This concept of adaptation is far more appropriate to the particular role and requirements of the military than that of radical change which may portend an uncertain future.

The ability of armed forces to adapt to new circumstances or requirements has been a key determinant of success and failure in battle throughout history. New circumstances may range from the introduction of technology such as the aircraft or the tank to the appearance of new strategies or tactics. The

application of innovative solutions to the exigencies of warfare and the capacity to marry new technology with new operational concepts can clearly deliver a significant advantage to the armed forces of a nation. It is logical to assume, therefore, that armed forces actively seek such a capability edge. However, the relationship between the military and change is highly problematic, as history demonstrates. In 1941, Rommel's *Afrika Korps* defeated a numerically superior British and Commonwealth 8th Army at the Battle of Sidi Rezegh. In his book *The Desert Generals*, Correlli Barnett suggests that, while Rommel was the beneficiary of a dynamic German military culture that embraced inter-war innovation, the defeated British General Cunningham was the inheritor of twenty years of British 'military decadence'.[1] This article explores the degree to which military organisational culture can explain German success and British failure, and to what extent this relationship between change and military culture remains relevant today.

Stereotypical views of the military have tended to focus on intrinsic military conservatism and the unwillingness of military elites to change. This has led critics such as Basil Liddell Hart to suggest that 'the only thing harder than getting a new idea into a military mind is to get an old one out.'[2] J F C Fuller shared this opinion, remarking that 'the average General cannot tolerate any change in preconceived ideas; prejudice sticks to his brain like tar to a blanket'.[3] Yet the suggestion that militaries are inherently culturally opposed to change and require external system shocks such as defeat in battle to drive fundamental change verges on the simplistic. Moreover, evidence suggests that military organisational culture is *not* a dominant driver of change relative to a number of other factors. While organisational culture can act as an impediment to revolutionary change, its relative conservatism plays an important role in guarding against ill-conceived radical change. The great strength of military culture is that it is well suited to driving adaptation, particularly in time of war. The reality that this article portrays, therefore, is less the Liddell Hart or Fuller line than the sentiment expressed by Douhet who commented that 'Victory always smiled on one who is able to renew traditional forms of warfare, and not the one who hopelessly tied himself to those forms.'[4] Change in the military should therefore be viewed as a process of adaptational renewal—retaining what is successful without being tied to the baggage of the past. This concept of adaptation is far more appropriate to the particular role and requirements of the military than that of radical change which portends an uncertain future.

To appreciate the tensions surrounding change and the military, it is important to understand the enduring characteristics of the environment in which military change

> Change in the military should therefore be viewed as a process of adaptational renewal …

occurs. In his introduction to *The Challenge of Change*, Winton suggests that it is the tension between continuity and change, between the need to maintain military traditions and authority during the grim realities of war and in the face of an uncertain future, on which the reluctance of the military to engage in radical change is based.[5] The dominating factor is the strategic environment.[6] Throughout history, civilian and military thinkers alike have sought to predict the nature of future conflict and thereby determine the requirements for armed forces to be victorious. The vagaries of such predictions are manifold; indeed the nature of future conflict is no less difficult to predict in the contemporary environment than it has been throughout history. Theories on the future of war continue to emerge, from Colin S Gray's continuation of historical patterns of conflict[7] to Rupert Smith's prediction of 'war amongst the people'.[8] Enormous uncertainties pervade military thinking on the nature of future warfare and, consequently, on preparations for future warfare.

Strategic uncertainty is also reflected in the relationship between the armed forces and the political and social environment.[9] The military does not exist in a vacuum.[10] The armed forces sit within a political and social environment that shapes attitudes and available resources in relation to competing priorities in the climate of the hour. Nor is the potential impact of new technologies ever entirely clear.[11] Revolutions in Military Affairs or Military Technical Revolutions have proven far easier to identify retrospectively than in the present or indeed the future.

The nature of the armed forces themselves is another significant enduring characteristic of the environment in which military change may occur. Different forces and services within those forces have their own characteristics, values and attitudes that interact constantly with the uncertainties outlined above.[12] This is by no means a one-way interaction, as the armed forces are subject to changes in the social and political environment while also capable themselves of influencing political and social discourse. Bacevich suggests that the contemporary US armed forces' demonstration of military 'mastery' has shaped the perceptions of American politicians who feel that they can and should make use of this capability.[13] Having examined the context for military change, it is now important to analyse the term 'change' as it applies to armed forces in this context.

In 'The Sources of Military Change', Farrell and Terriff outline three 'pathways' to military change: innovation, adaptation and emulation.[14] Perhaps the most common definition of change in military terms refers to innovative change, particularly in peacetime. Such change is variously described as a fundamental change in doctrine, adoption of new technology, the creation of a new combat arm or new roles and objectives.[15] These changes are typified in historical examples such as the creation of an independent air force, the development of carrier-based aviation and the mechanisation of armies in the inter-war period. Innovative change can thus be defined as major change based on new ideas.

The second form of change nominated by Farrell and Terriff is adaptation, which they describe as refining and adjusting to new requirements without necessarily implementing radical reform. It is this form of change, particularly in wartime, for which the military is best suited, and this will be examined in more detail later. Farrell and Terriff's third form of change is emulative change. This 'pathway' to change is most often identified with developing armies or smaller states which, rather than innovating themselves, mimic or adopt developments perceived as positive in other forces.[16] Indeed the British Army's influence in nations such as Ghana and Nigeria has seen it adopted as a role model for both military and civilian aspects of society.[17] Emulative change is a significant aspect of change in the armed forces of many nations and, as such, the emulative qualities of military culture are worthy of consideration. However, for the purposes of addressing the degree to which military culture is a driver or impediment to change, innovative and adaptational change provide a more useful framework.

> Innovative change can thus be defined as major change based on new ideas.

Another form of change worthy of mention is the newly described 'transformational' change. At first glance this form of change shares many of the properties associated with innovative change such as the need to engage in fundamental reforms during a period of relative peace. Transformational change does, however, differ in one significant aspect, as former US Secretary for Defense, Donald Rumsfeld, noted:

> We need to change not only the capabilities at our disposal, but also how we think about war. All the high-tech weapons in the world will not transform the U.S. armed forces unless we also transform the way we think, the way we train, the way we exercise, and the way we fight.[18]

Transformation, according to this description, aims to change the *way* armed forces adapt, and seeks to transform military organisational culture to one of innovation. However, this aspiration becomes problematic when confronted with the reality of external influences and the drivers of change.

In order to establish the extent to which military organisational culture is either a driver or impediment to change, it is important to examine the other drivers for change that may also prove influential. While there are numerous drivers for change discussed in a variety of texts, most acknowledge the significance of the strategic environment and potential threats as key drivers for change.[19] Whether potential threats can be described in traditional terms such as conventional inter-state threats, or are less historically recognisable as is globalised terrorism, there will always be a spectrum of threat that shapes the military environment of any

armed force. Conversely, the absence of a direct or specific threat can be even more problematic.[20]

A second major driver for change is the political environment and the imperatives of the day. Political and social appetite for investment in the armed forces is influenced by available resources and perceptions and prejudices regarding the role of the military within society.[21] This is itself a function of factors such as geography, which can result in debates over continental and maritime approaches to strategy, and historical experience. The degree to which the experience of the First World War influenced inter-war perceptions of the role of war and the armed forces in many nations should not be underestimated in understanding military innovation during that period.[22] It is at this stage that military culture should be introduced as a factor in driving or impeding change, for what the inter-war period clearly demonstrates is that it is the combination of external drivers such as strategic and political imperatives, and their interaction with the military culture of a nation's armed forces that shapes the way armed forces innovate—or choose not to innovate.

Returning to the British defeat at Sidi Rezegh, the extent to which British military culture should bear the blame remains highly debatable. British strategic outlook between the wars was less clear than retrospect might have us believe. Tensions between continental and maritime approaches to strategy re-emerged and political and social imperatives, along with issues of resourcing, created an environment that was not conducive to radical innovation. In his assessment of British failures, Barnett points to the tendency to view the British army as an 'imperial gendarmerie' as a factor in impeding the development of mechanisation.[23] The mantra of 'no major war for 10 years' that underpinned the strategic outlook was more a social and political driver than a military assessment.[24] Yet the British Army did establish experimental organisations to investigate mechanisation and sought to improve its performance across the spectrum of military requirements—including its constabulary tasks. While the fact that more radical change did not occur was certainly a result of internal organisational factors, military culture was not a significant driver of that change that did occur. External drivers set the conditions in which innovation might occur—to argue that change was impeded by a culture that blindly sought to retain the old—such as the horse—while refusing to embrace the new—the tank—is far too simplistic.

Technology itself is a further driver for change. The impact of technology of any form on the battlefields of the future has proven almost impossible to predict at any stage throughout history, whether that technology has taken the form of the

> A second major driver for change is the political environment and the imperatives of the day.

longbow, air power or information systems. The tendency of armed forces to be slow to adopt new technology in innovative ways will be further analysed as military organisational culture is examined.

There are many definitions of culture, all of which centre on the notion that culture is the sum of the values, attitudes and norms of behaviour of a group. Thus culture, as the very foundation of a group or organisation, is an aspect of behaviour that is extremely difficult to change. Military culture is in part drawn from the society from which it originates, but is perhaps most fundamentally influenced by the role of the armed forces in war.[25] It is this role that shapes its unique structures, qualities, attitudes and outlook and therefore gives the military its organisational ideology. This is critical in appreciating the reluctance of the military to change in the face of uncertainty, as the cost of failure to change appropriately is death and defeat.

Military culture is also a product of its promotion system, with promotion potentially driven by anything from birthright to merit. Unlike many businesses, the armed forces cannot recruit laterally from similar organisations in order to effect internal change or to introduce fresh thinking.[26] Inter-service relationships and identities are important in shaping the culture of the armed forces, as these represent enduring tensions in the way the services define themselves.[27] Strachan suggests that the real danger in inter-service rivalry is that, while competition may focus on scarce resources, the arguments essentially concern strategic rationales.[28] Strachan cites the early twentieth century British Admiral Sir Jackie Fisher who argued for the employment of the army as an amphibious force in support of a maritime strategy, but whose driving philosophy was actually based on his mantra of 'every penny unnecessarily spent on the army means 2 pennies taken from the navy'.[29]

It is therefore not a single or homogenous culture, but a culture of sub-cultures that defines the military. This 'density' of culture has a profound effect on the ability of armed forces to accommodate radical change, as this in turn relates to the bureaucratic aspect of military culture.

The characteristics of military culture as they relate to innovative change in peacetime are also worth examining. The first of these characteristics is conservatism. The armed forces share a number of characteristics with other bureaucracies, including a desire to maintain the status quo. Bureaucracies tend to feel less threatened when conditions of resources, politics and internal organisation are stable.[30] Within the military, however, this conservatism is often the result of factors other than simple bureaucratic protectionism. These additional factors relate to the origins of military elites within society and their dependence on support from society, whether it is political support or the provision of the resources required to maintain

> Technology itself is a further driver for change.

a privileged position within that society.[31] Janowitz suggests that conservatism is the 'only appropriate ideology' for the officer class.[32] Conservatism and tradition-alism can also be seen through another prism—as responses to the uncertainties faced by the armed forces over the future of warfare. Janowitz argues that the experi-ences of the past become a 'powerful precedent' for future warfare in the face of this uncertainty.[33] Celebrating past achievements and utilising the past as the basis for considering the future, rather than embracing radical change in the face of uncertainty, should be viewed in this broader context.

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Military conservatism and traditionalism tend to take the form of 'dogmatic doctrine'.[34] Doctrine encompasses those considerations that have proven valid in the past, and can become dogmatic when unquestioned or applied blindly. Arguably it is this factor more than any other that impedes innovative change. Rather than sustaining an atmosphere of continuous professional debate, the existence of and reliance on doctrine may stifle innovative thought. Military doctrine by its very nature aims to capture the hard-earned lessons of the past. Thus, doctrine should not be discarded lightly on the appearance of a new military fad or theory—often a new technology—that is proffered as the 'way ahead' in times of strategic or political uncertainty.

A 'cultural lag' in technology terms is another military cultural characteristic that influences innovative change.[35] Significantly perhaps, this is not a uniquely military characteristic, but rather one that military culture shares with industry. This characteristic is based on the principle that, until technology proves its worth, the organisation cannot afford to take the risk associated with its adoption. The cost in failing to utilise emerging technologies effectively is, however, far greater in war than in industry.[36] As such, this constitutes an enduring challenge for the military, and is an element of change contemporary armed forces have struggled with at an institutional level.

The armed forces possess an institutionalised routine, internal structures and processes unique to the military. External influences such as the impact of technology through equipment procurement systems or future trends analysis through doctrine development branches are internalised by incorporation into the routine activity of the armed forces. This is particularly noteworthy when radical change or transfor-mation is itself 'bureaucratised' and therefore diluted.[37] This in turn suggests that innovative change is more likely to come from 'outsiders', be they external drivers or dissenting voices from within.[38] Perhaps the greatest tension for the armed forces, and one that most differentiates the military from other organisations, is the requirement

to balance change with the need to maintain the 'fighter spirit'.[39] Traditions, mannerisms and values that can appear irrelevant or archaic in peacetime are perpetuated by the armed forces, due to a perceived need to retain the moral component of fighting power in the face of changing societal, political or strategic drivers. The retention of the 'regimental system' in the British Army is often rationalised on this basis.[40]

Significantly, it is the way the military enacts change in peacetime that most clearly demonstrates the relative lack of influence of military culture as a driver of change compared to external drivers. Winton provides a useful framework for examining the way the military effects change in peacetime, using a three-step process to illustrate the difficulties faced by the armed forces in innovating. In the first step, the military, in coordination with social, political and technological influences, attempts to establish a clear picture of future conflict.[41] This is a complex and problematic process and one that is unlikely to be resolved either to the satisfaction of those involved or indeed when tested against reality. Failing at this step, however, presents the very real danger of preparing the armed forces for the wrong war.[42] Assuming that the organisation can develop an agreed picture of future threats, the next step is to develop the concepts, procedures and tactics that will ensure victory.[43] At this stage there should be widespread debate and discussion within the organisation—here military culture has a role to play in its ability to tolerate 'dissenting voices' that propose radical or innovative concepts.[44] Such dissenting voices are only useful when they remain constructive. Murray argues that both Fuller and Liddell Hart became counter-productive as time passed due to their antagonistic criticism of military leadership.[45] Such debate will inevitably also be influenced by internal factors such as service rivalries, traditional versus reformist views, and by political imperatives such as the national budget. The third step, the establishment of experimental organisations to test and trial new concepts, can ultimately only be reached when a degree of clarity has been achieved in the first two steps. Winton acknowledges that this process is, of course, iterative; however, his process does highlight two key factors.[46] Firstly, it is external conditions, especially strategic uncertainty, political imperatives and economics, that set the conditions for innovative change rather than military organisational culture acting as the principal driver. Secondly, internal culture through conservatism and traditionalism does shape the nature of change, and is more likely to impede innovation in the face of uncertainty than to drive towards a vaguely defined future. Military organisational culture therefore can be seen as an impediment to change, but only due to its relationship with uncertainty.

> The cost in failing to utilise emerging technologies effectively is, however, far greater in war than in industry.

Given an uncertain strategic and political environment, the military bureaucracy naturally exhibits an inherent opposition to change. In this regard leadership plays a key role, whether enunciating a 'way ahead', encouraging open debate or actively supporting experimentation in relation to the process of change. However, leaders who rise from within the ranks of the organisation will tend to be promoted based on their success within the established norms of that organisation.[47] The differences in influence between inter-war British Chiefs of the Imperial General Staff, with Wilson as innovator and Montgomery-Massingberd as traditionalist, bear testament to the role of leadership in influencing innovation and change.[48] However, military conservatism is not the horse-bound cavalry stereotype often trotted out; rather it is a response to the gross uncertainty of the future. Faced with the ambiguities of the future nature of warfare, the military cannot afford to change in radical ways lest such changes

> Military organisational culture therefore can be seen as an impediment to change, but only due to its relationship with uncertainty.

be based on a flawed vision. Even where clear opportunities for innovation are apparent, and the necessary leadership exists, innovation depends on the existence of appropriate strategic, political and economic conditions in order to take advantage of new concepts or technologies. The recent conversion of the Australian Army from a predominantly light infantry force to a mechanised, 'hardened and networked' force was the result of a combination of the contemporary strategic environment, the culmination of a sustained period of political and social support, and a strong economy. This change occurred in spite of significant resistance from within the military, offset perhaps by effective leadership from the Chief of the Army.

The inter-war German Army, often mooted as an exception to military conservatism, is an excellent model for embracing innovative change. The German inter-war military culture was strongly supportive of innovative change, emphasising particularly the value of intellectual excellence in the selection and promotion of general staff officers.[49] In the 1970s the US Army attempted to distil much of the perceived German excellence, identifying characteristics of the general staff system such as selection and training, inculcation of initiative and the goal of technical-tactical perfection as desirable military cultural attributes that could be emulated to enhance US military capability.[50] The characteristics of the German inter-war military culture have been suggested as the drivers of the mechanisation and supporting combined arms doctrine that led to the stunning military successes of 1939–40. German military innovation is often held in stark contrast to the military conservatism of the inter-war British and French armies. What this argument tends to

ignore, however, is the fundamentally different strategic, political and social environments in which those three militaries found themselves during the inter-war period. The ability of the German Army to embrace mechanisation was certainly influenced by the culture of the officer corps and the leadership of such heavyweights as von Seeckt and Guderian. The conditions for innovation and change were, however, highly favourable.[51] Germany could easily envisage another continental war and one that would likely involve a fight on two fronts. In a nation humiliated by the perceived injustices of the Versailles peace, military development was socially desirable as a means of regaining national pride. When the Nazis came to power in the 1930s, military spending supported the mechanisation program and the development of advanced aircraft. These developments took place within a military culture more conducive to the development of combined arms doctrine than the British regimental system of the time. However, the close relationship between politics and the military came at a cost. German military culture also influenced perceptions of military capability and power, and this in turn influenced Hitler's policies and shaped the perilous direction of German strategy in the late 1930s. It can also be argued that the apparent innovative doctrinal changes of the inter-war years were, in fact, the continuation of changes that were initiated as early as 1916.[52]

The modernisation and professionalisation of armies provides a second counter-argument to the thesis of culture as a minor driver or indeed impediment to change. Towards the end of the twentieth century, Western armed forces became increasingly lean, professional

> … the military cannot afford to change in radical ways lest such changes be based on a flawed vision.

organisations, often in emulation of the inter-war German model. Arguably, militaries have institutionalised the components that require change—doctrinal development, lessons learned, officer training establishments and simulation and experimentation.[53] These have, however, become a mechanism not for innovation, but rather for refining existing tools, thereby producing, for example, a better fighter rather than gambling on something new and untried. Indeed the very act of institutionalising the mechanisms for change inducts them into the routine of the organisation, and where change becomes routine, innovation is stifled in favour of the refinement of known concepts.[54] The US Army development of doctrine in the post-Cold War era further suggests the significance of external drivers. While the Cold War-developed air-land doctrine had proven its worth during the 1991 Gulf War, the era which followed this victory was one of significant strategic uncertainty. Rather than revolutionise doctrine in the face of new requirements, the US Army merely continued to add to and adapt its successful 1991 formula to

the conflicts that followed.[55] Professionalisation therefore cannot of itself account for the influence of external drivers such as strategic uncertainty in the post-Cold War era and budgetary constraints imposed by the ensuing 'peace dividend'.

The most recent response to perceived military conservatism has been transformation. Transformation seeks to institutionalise change by transforming military culture to one of constant change and innovation. This, however, can tend to once more institutionalise change, allowing military bureaucracy to again internalise the process of change. External drivers have perhaps wielded the greatest influence on the transformation agenda in the United States and the reality of current conflicts has done much to hijack that transformation agenda. For example, the medium-weight Stryker Brigade capability, originally the flagship of a futuristic transformed army, was rushed into operational service and adapted for contemporary requirements. Likewise the contemporary environment has dictated the available budget for experimentation and innovation. Perhaps the greatest impediment to transformation is, however, the fact that it attempts to change culture, a culture that is inherently conservative for profound reasons of continuity and stability in the face of uncertainty. Despite the role of military culture in influencing innovative change when appropriate external conditions exist as per the German inter-war model, and despite the modernisation and professionalisation of armies and attempts at transformative change, military culture remains a minor driver of innovative change and, at worst, an impediment to change. The strength of military culture lies in adaptation in time of war.

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I am not suggesting that armed forces are incapable of change—particularly innovative change—when the external conditions are set. Military conservatism does, however, play a role in peacetime in guarding the 'baby' of tradition—the 'fighter spirit' and established and proven doctrine—to ensure it is not 'thrown out with the bathwater' as external drivers come into play. Further, it is those characteristics of military culture that can impede innovative change in peacetime that endow the armed forces with the resilience to drive adaptation in time of war. Unlike the perilous art of predicting future threats and challenges in peacetime, in war much of the veil of uncertainty is removed. Threats are relatively clear and immediate. Requirements for new concepts, techniques and technology are more apparent. The traditional and new become fused as the 'fighter spirit' is adapted to the new conflict. The hierarchical structures now enable lessons identified to be rapidly spread throughout the organisation. The speedy redevelopment of effective close air support in Afghanistan in 2007 by the Royal Air Force, despite its Cold War focus on air interdiction, is one example of this rapid adaptation. Technology can

be tested and adopted where useful and targeted where clear capability gaps exist. In war, innovation and success are rewarded rather than regarded as a threat to the status quo. Importantly, the external drivers for change now play a vital supporting role, with a greater likelihood of political support and adequate resources to provide for urgent adaptation. However, the degree to which the military is prepared to effect the required changes, balancing a capability gap at the outset of the conflict with the requirements of the new threat, will depend on the capacity of the armed forces to effectively prepare in time of peace. It will depend on their ability to acknowledge the uncertain environment, maintain a balanced and dynamic approach and develop a culture that reflects Douhet's concept of renewal. Where the ground to be made up is too great, any amount of adaptation will likely fall short of requirements or, at worst, see a significant price paid in blood as the 8th Army found in 1941.

Change and uncertainty provide a volatile mix, one that constitutes an enduring challenge for any armed force. This challenge was recognised by General Douglas MacArthur when he addressed the US Military Academy at West Point in 1962:

> Through all this welter of change, your mission remains fixed, determined, inviolable—it is to win our wars.[56]

The ability to prepare to fight the next war is fundamental to the profession of arms, and the drivers to achieve the necessary change have been examined in this article. Military organisational culture is not a major driver for innovative change in peacetime. The degree to which military culture is an impediment to change, however, is not wholly due to stereotypical or inherent military conservatism and traditionalism, based on bureaucratic protection or military elitism. Rather this conservatism can be seen as a result of the imperative to maintain a degree of stability in the face of uncertain strategic, political and techno-logical drivers. Where external drivers set the conditions for change, military culture can act as a positive driver to pursue that change. The true strength of military culture in driving change is in

> The ability to prepare to fight the next war is fundamental to the profession of arms …

times of war, when the ability of the military to adapt and the immediacy of the threat combine to produce rapid and, at times, revolutionary change. The challenge for the military is to maintain balance in the face of uncertainty during time of peace, and yet continue to debate, develop and change in order to ensure that when conflict comes, it is a matter of adaptation and not the shock of defeat that drives the required change.

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THE FOUNDATION FOR AN ADAPTIVE APPROACH

INSIGHTS FROM THE SCIENCE OF COMPLEX SYSTEMS

DR ALEX RYAN

ABSTRACT

Many who have studied the issue agree that warfare is becoming more and more complex. Yet, while the complexity of war is certainly increasing, our perception of the problem is also coloured by our increasing *consciousness* of war's complexity. Coping with this situation has proven difficult, as the long—and still-continuing—learning process witnessed in Iraq and Afghanistan demonstrates. The Australian Army has risen to this challenge with the release of *Adaptive Campaigning* and the launch of the Adaptive Army initiative. Providing the theoretical foundation of these approaches is 'complex systems science', a type of interdisciplinary research into complexity. While many in the Army are familiar with *Adaptive Campaigning* and the Adaptive Army, few are familiar with complex systems science. The purpose of this article is to provide an accessible introduction to complex systems science, and demonstrate how its principles are reflected in the Australian Army's adaptive approach.

Indeed, the ability to adapt is probably most useful to any military organization and most characteristic of successful ones, for with it, it is possible to overcome both learning and predictive failures.

Eliot Cohen and John Gooch, *Military Misfortunes*[1]

You do not have to read too far in contemporary military theory to encounter the assertion that war is becoming more complex. There are clearly some objective features of the modern world that support this claim: it is more networked, information flows faster and further, and armies are larger than in times past. Yet complexity itself is not a new feature of warfare. The newness is at least, in part, our understanding of how to cope with it. We used to think that we had to rely on the mysterious and fickle genius of the heroic commander. With the industrial revolution, the planning and decision-making process gradually built up a well-oiled machine to reduce reliance on individual genius. This machine had many moving parts and specialised functions that needed to be synchronised and deconflicted with hierarchical control in detail. We now know that this mechanistic approach is useful for solving complicated problems but does little to address complexity.

For the past twenty-five years, the subject of complexity has been the subject of intense scrutiny by scientists from many varied backgrounds, which has resulted in the formation of a new field called complex systems science. In addition to providing a better understanding of complexity, this science is generating many new insights on how to cope with complexity, and even how to exploit it. The thread that ties all of these advances together is 'adaptivity'. Every approach to addressing complexity shares this core: that adaptation is the way to cope with complexity. With the Adaptive Army initiative and *Adaptive Campaigning*, the Australian Army has recognised the fundamental importance of an adaptive approach. However, the scientific foundation that supports these innovative concepts is not widely appreciated. The purpose of this paper is to provide an accessible introduction to complex systems science, and demonstrate how its principles are reflected in the Australian Army's adaptive approach.[2]

INTRODUCING COMPLEX SYSTEMS SCIENCE

The founding of the Santa Fe Institute (SFI) in 1984 to pursue problem-driven science marked the beginning of complex systems science. The purpose of the SFI is to tackle the really hard problems, ones that do not fit neatly within traditional

scientific disciplines. This means the kind of problems complex systems science applies to is not determined by the particular composition of the system (the parts could be atoms, ants or armies) but by the nature of the relationships between the parts. Because of this, the language may seem a bit abstract. However, the abstract and general language used in complex systems has a crucial advantage over traditional scientific discourse. When faced with a messy real world problem, the complex systems lexicon provides an interdisciplinary framework for making sense of the problem that draws on insights from across the sciences. Its abstractness works in our favour because it is better suited to considering the interplay between social and technical components, psychological and physical domains, and quantitative and qualitative approaches. While individual disciplines focus on understanding parts of the system in greater detail, for the purposes of directing military action, comprehensive understanding of the whole system is much more important. The remarkable thing about complex systems science is that it is at the same time highly applied and practical even as it is fundamental.[3]

Over time, complex systems science has developed a framework of concepts that help to comprehend and explain the dynamics of complex systems. Some of these concepts are summarised in Table 1, below. There is no concise definition of complexity that all complex systems scientists are agreed upon. However, the essence of complexity is related to the amount of variety within the system, as well as how interdependent the different components are. Interdependence means that changes in the system generate many circular ripple effects, while variety means there are many possible alternative states of the system and its parts. Because interdependencies are the result of many interactions over time, complexity is fundamentally a dynamic characteristic of a system. In the table below, the concepts of emergence, self-organisation, autonomous agents, attractors and adaptation all contribute to a deeper understanding of complexity. All are capable of generating novelty—new variety or new patterns that increase the complexity of the system.

Complex systems science studies complex adaptive systems, which are all either living systems, or the products of living systems (such as the Internet). A complex adaptive system is open to flows of energy, matter and information, which flow through networks of both positive and negative feedback. Feedback is a fundamental concept because it marks the difference between linear and non-linear systems. Whereas outputs are always proportional to inputs in linear systems, non-linear systems magnify some inputs (positive feedback) and counteract others (negative

> … the abstract and general language used in complex systems has a crucial advantage over traditional scientific discourse.

Table 1: Key concepts of complex systems science

Concept	Essence	Example
Complexity	Variety and interdependence	Amazon rainforest
Emergence	Whole different than sum of the parts	Brain is conscious even though individual neurons are not
Self-organisation	Increasing order from the bottom up	Flocking birds form intricate patterns
Attractor	A point or set of points that attracts all nearby states of a dynamic system	Normal rhythmic beating of the human heart
Autonomous Agents	Self-interested agents make local decisions from local information	Peak hour traffic
Adaptation	Increasing fit to the environment	Evolution of specialised bird beaks to suit the available food sources

feedback).[4] Because feedback creates interdependence, it is a source of complexity. Feedback is also the underlying cause of emergence, self-organisation and attractors. For many centuries, most scientists approximated non-linear systems using linear methods, a very useful simplification, but one that only works up to a point.

By acting on local information, autonomous agents within a complex system naturally generate variety, because each agent has a slightly different context. To achieve their goals, agents cooperate and compete with one another, which results in interdependencies and multiple levels of organisation, where agents at one level cooperate to compete better at the next level up. As the agents continually co-adapt to one another, new niches for specialised agents arise, which means their environment is open ended, and too vast and novel to allow the agents to find a permanently optimal strategy. Rather than optimise, the agents must continue to adapt to maintain their fitness—their fit with their environment.

The US Marine Corps were the first warfighting organisation to realise that complex systems science could help to describe the complexity of war. In 1997, the Marine Corps' primary manual, *Warfighting,* was updated to incorporate insights from complex systems science:

As the agents continually co-adapt to one another, new niches for specialised agents arise…

[W]ar is not governed by the actions or decisions of a single individual in any one place but emerges from the collective behavior of all the individual parts in the system interacting locally in response to local conditions and incomplete information. A military action is not the monolithic execution of a single decision by a single entity but necessarily involves near-countless independent but interrelated decisions and actions being taken simultaneously throughout the organization. Efforts to fully centralize military operations and to exert complete control by a single decisionmaker are inconsistent with the intrinsically complex and distributed nature of war.[5]

A simple example of how positive and negative feedback drives self-organisation and leads to the emergence of a global pattern is shown in Figure 1. Starting with a random mix of black and white 'agents', each agent chooses its colour according to two rules. Short range activation means the agent wants to be the same colour as the majority of its neighbours (this is positive feedback). Long range inhibition means the agent wants to be different than agents that are further away (which provides negative feedback). As a result of local agents making local decisions according to these simple rules, within five time steps a stable global pattern has emerged. This model is more than just an interesting pattern, it has been used to explain phenomena as diverse as the growth and differentiation of the structure of an organism, pattern formation in animal fur, and the clustering of industries in regional economics.[6]

Australia's Defence Science and Technology Organisation (DSTO) is leading international research in complex systems science, including The Technical Cooperation Panel (TTCP) action group on Complex Adaptive Systems, chaired by DSTO Research Leader Anne-Marie Grisogono. Defence applications to date include: support to reconstruction operations in Afghanistan; assessing the implications for command and control; application to operational concepts; organisational and force design and structure; new ways of modelling conflict; training for adaptability; and developing a systemic approach to counter improvised explosive devices.

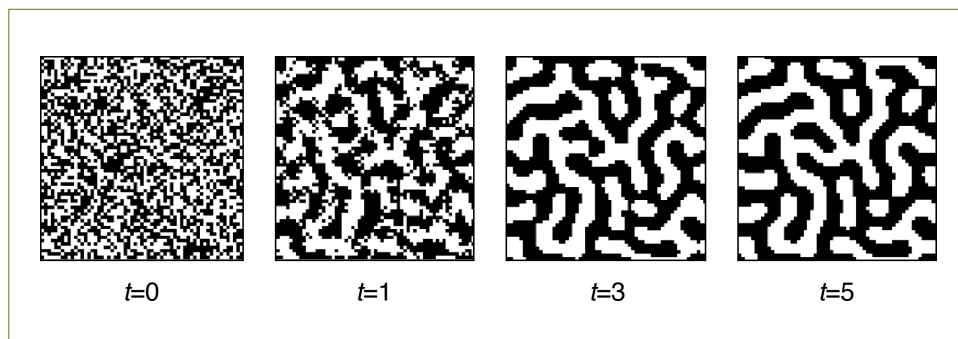t=0 $\qquad$ t=1 $\qquad$ t=3 $\qquad$ t=5

Figure 1. Pattern formation as an example of self-organisation and emergence

These studies and international collaborations have led to a number of more general insights into the nature of complexity and its relevance to defence. The following section will summarise the lessons learned from our experience to date.

INSIGHTS FROM COMPLEX SYSTEMS SCIENCE

This section describes seven insights from the latest research in complex systems science. Together, these insights demonstrate how complex systems science offers a theoretical foundation, a coherent framework, and a common language for explaining why some approaches to complex warfighting succeed and others fail.

1. SOLVING COMPLEX PROBLEMS IS FUNDAMENTALLY DIFFERENT TO SOLVING COMPLICATED PROBLEMS

When a Bushmaster breaks down, this is a complicated problem. The best way to solve it is with a subject matter expert—a mechanic—who has detailed knowledge of the vehicle. The problem may not be immediately obvious, but a trained mechanic knows how to go about diagnosing and fixing it. There is a right way for the vehicle to operate, and it is easy to assess whether the vehicle is working or not. The best trick we know for solving complicated problems is decomposition of the whole into parts. By checking different subsystems, the mechanic can isolate the cause of the problem, can take the system apart and reassemble it, and moreover the parts are fixed and interchangeable spare parts exist. Parts are interrelated, but those relationships are effectively static over time. This means the solution does not depend on whether the mechanic is available today, tomorrow, or in two weeks time.

When a Bushmaster breaks down outside a busy marketplace in Tarin Kowt, Afghanistan, this is a complex problem. The appropriate course of action is sensitive to both time and context. Questions about the time of day, recent history of incidents, proximity of backup, area permissiveness, potential threats, and presence of media or video recording equipment must be quickly evaluated and appropriately weighted. The second-order effects of the risks to personnel and civilians from a hostile actor exploiting the situation must be considered. Whether the crew commander decides to let the crew attempt the repair, wait for support or abandon the vehicle, different risks will be incurred with different ramifications for the mission.

It is not appropriate to rely on a subject matter expert to resolve this problem, because deep but narrow expertise does not on its own help to solve an issue that demands a holistic assessment of the context to derive an appropriate response. Nor will decomposing the problem into its components work, because this ignores the trade-offs and relationships between parts. Complex problems cannot be solved using techniques that are successful for complicated problems. While some

people are able to naturally cope with complexity, for many they first need to open themselves up to a new mind set, aspects of which are captured within each of the insights below.

2. WARFARE CONTAINS FUNDAMENTAL AND IRREDUCIBLE UNCERTAINTY AND UNPREDICTABILITY

This is hardly a novel insight. Carl von Clausewitz famously wrote:

> War is the realm of chance. No other human activity gives it greater scope: no other has such incessant and varied dealings with this intruder. Chance makes everything more uncertain and interferes with the whole course of events.[7]

He discussed how more information can actually make us more uncertain, and characterised intelligence reports in war as often contradictory or false and mostly uncertain. For Clausewitz, the three sources of unpredictability and uncertainty in war are interaction, friction and chance. Interaction distinguishes war from mechanical arts directed at inanimate matter, because in war 'the will is directed at an animate object that reacts'. Friction is roughly those factors that differentiate between real war and war on paper. Chance is the tendency within the remarkable trinity (violence, chance, rationality) characterising war that is of most concern to the commander and his army.

Yet in recent years, some military theorists have used 'Information Age' science and technology to claim that the sources of uncertainty are not fundamental but stem from limits in the available sensors and communications technology. The most prominent advocate of this position is David Alberts, the US Director of Research for the Office of the Assistant Secretary of Defense for Networks and Information Integration. In their book *Network Centric Warfare*, Alberts, Garstka and Stein write:

> While the Information Age will not eliminate the fog and friction of war, it will surely significantly reduce it, or at the very least change the nature of the uncertainties. We need to rethink the concepts and practices that were born out of a different reality.[8]

The new reality of Network-Centric Warfare (NCW) seeks to achieve 'information superiority':

> As in the commercial sector, information has the dimensions of relevance, accuracy, and timeliness. And as in the commercial sector, the upper limit in the information domain is reached as information relevance, accuracy, and timeliness approach 100 percent. Of course, as in the commercial sector, we may never be able to approach these limits.[9]

For Alberts *et al*, 'In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battlespace.' Whereas Clausewitz saw fundamental differences between war and other professions, Alberts *et al*

argue that 'the basic dynamics of the value-creation process are domain independent'. While Clausewitz pointed out that more information often increases uncertainty and will be false or contradictory, for Alberts *et al*, more information is always better and 100 per cent relevant, accurate and timely information is a useful goal.

The insights from complex systems science overwhelmingly support Clausewitz's view of war, not the NCW thesis. The first person to recognise the link between the non-linear sciences and Clausewitz was Alan Beyerchen. Beyerchen suggested that the notorious difficulties of interpreting *On War* were at least in part due to the predominance of a linear approach to analysis, when Clausewitz 'perceived and articulated the nature of war as an energy-consuming phenomenon involving competing and interactive factors, attention to which reveals a messy mix of order and unpredictability'.[10] Beyerchen traced deep connections between Clausewitz's discussions of interaction, friction and chance with key concepts from non-linear science, including positive feedback, instability, entropy and chaos. Beyerchen's two major conclusions were that an understanding of complex systems (or at least a non-linear intuition) may be a prerequisite for fully understanding Clausewitz, and that the non-linear sciences may help to establish fundamental limits to predictability in war.

All of the concepts described above that contribute to complexity—emergence, self-organisation, autonomous agents, attractors and adaptation—are present in war. All of these sources of complexity generate novelty and surprise. An important implication is that war is fundamentally and irreducibly uncertain and unpredictable. This means that efforts to predict and control in warfare will often only mask the true complexity of the situation, rather than actually reducing or eliminating it. The danger of over-simplifying a complex situation is that actions have unintended consequences that undermine the best of intentions and efforts. In spite of the understandable urge to impose order on chaos, an understanding of complex systems suggests that we would be better served by focusing on exploiting the transformative potential of sources of uncertainty and surprise, to view irreducible uncertainty as an opportunity to disorient the adversary rather than a risk to mitigate.

> An important implication is that war is fundamentally and irreducibly uncertain and unpredictable.

3. COMPLEX PROBLEMS CROSS MULTIPLE SCALES

Organisations divide up responsibility for solving problems among their members. Most organisations, including the military, employ a hierarchy to separate problems at different scales. Lower echelons of the military hierarchy tend to have a shorter time scale, a faster battle rhythm, and a smaller area of interest.

Higher echelons tend to focus on longer time scales, change more slowly, and focus on a much larger spatial scale, but with reduced resolution. This is a highly effective structure for solving problems that arise at different scales. However, complex problems could be defined as those problems that cannot be solved at a single scale. They require coordination, multiple perspectives, and a systematic response because cross-scale effects interlink problems at different scales. Putting someone in charge does not in itself solve a complex problem, because it does not help address cross-scale effects. We need fundamentally new strategies for solving multi-scale problems.[11]

We now know that warfare and terrorism are multi-scale phenomena, because conflict casualties in both cases are described by a power law.[12] A power law means that there is no characteristic scale for the system. A power law is a flag for complex behaviour, indicating that there is positive feedback in the system, and meaning that seemingly improbably large events are likely to occur. Power laws are often described as distributions where the rich get richer (wealth distribution was one of the first data sets where a power law was noticed). In warfare, this translates to 'clumpy' casualty events—when it rains, it pours. Despite the fact that the mean number killed and wounded by suicide terrorist attacks is 41.11 people, the World Trade Center attack in September 2001 that killed 2749 people is described by the same power law distribution.[13] Most suicide terrorist attacks actually have far fewer than forty-one casualties. Unfortunately, knowing the average does not tell us much about systems governed by a power law. Power laws provide one powerful mathematical explanation for Clausewitz's perceptive observation that more information can lead to greater uncertainty. If height followed a power law instead of the normal distribution (or bell curve), with a global population of six billion people we would expect the tallest person to be over eighty kilometres tall! The multi-scale nature of warfare has a profound effect on how we assess risk, how we gather and interpret information, and how we resolve complex issues.

> The multi-scale nature of warfare has a profound effect on how we assess risk, how we gather and interpret information, and how we resolve complex issues.

4. SOURCES OF ORDER IN COMPLEX SYSTEMS COME FROM THE BOTTOM UP AS WELL AS FROM THE TOP DOWN

Trying to change the culture of an organisation from the top down always generates resistance. While this can be frustrating, it is perfectly natural. Any organisation that is easy to change will not be around for long. Armies are enduring institutions precisely because they are stable and robust to change. Just like organisations, societies exhibit a certain stability, even in dysfunctional and conflict-ridden

states. Old patterns of behaviour tend to perpetuate and stubbornly resist improvement. The stability can be understood as a consistent set of interlocking positive and negative feedback loops. Unless these feedback loops are altered, external interventions to improve the situation are likely to be only temporary.

A metaphor is useful for understanding the change in mindset required to transform a system that contains self-organising dynamics.[14] A billiard ball on a pool table is (approximately) a linear system. The ball travels in a straight line for a distance proportional to the amount of force applied by the pool cue. Now suppose that the pool table is not flat, but contains many small hills and valleys. If the ball is resting on the top of a hill, it is in an unstable state. The smallest force will move the ball a long way as it runs down the hill and into a valley (this is positive feedback). As the ball rolls around the valley, it is attracted to the lowest point in the valley, where it eventually comes to rest. Now, if the ball is not struck with sufficient energy, it will simply roll back to the attractor (this is negative feedback). The region of all points that roll back to the attractor is known as the basin of attraction. The amount of energy required to escape the basin of attraction depends on the depth of the valley.

In this metaphor, direct control through the formal mechanisms means moving the ball by striking it with the cue. Not understanding the self-organising mechanisms in a system is like playing pool on a rugged pool table and expecting it to be completely smooth. A better understanding of the landscape can help to plot a better path that uses the gradients to advantage. In reality, feedback loops are not usually fixed, but can be changed over time. For the pool table, this means we may have some ability to mould the landscape or tilt the pool table. By lowering a ridgeline, we may be able to decrease dramatically the amount of energy needed to escape the basin of attraction. Once the ball is where we would like it, we can then make sure it stays there by creating a valley and deepening the well at that point. This is what is meant by altering the feedback loops within a dynamic system. In combination, the use of top down and bottom up methods for changing the system's attractor may be far more effective than either approach alone.

Winning wars often requires changing societies as well as changing oneself. Both require an understanding of the bottom-up, self-organising sources of order and stability in addition to the top-down, formal mechanisms for imposing order. Just as in the billiard ball metaphor, such an understanding helps to identify areas dominated by positive and negative feedback. Areas of positive feedback are highly sensitive to change, which means they are levers for transforming the system. A small injection of energy yields a disproportionately large return on investment within an area of positive

> Winning wars often requires changing societies as well as changing oneself.

feedback. From a systems perspective, these levers are the 'key terrain'. Areas of negative feedback will resist even large injections of energy. Continuing to push uphill against a deeply entrenched negative feedback loop is not consistent with the military principle of economy of effort. Exploiting an understanding of self-organisation can greatly augment attempts to change the formal structures that are built on top of informal bottom-up processes. Actually changing the feedback loops can lead to even greater influence over the system.

Of course, societies and organisations are much more complex than billiard balls. It is more like we are trying to herd a million billiard balls towards an unknown attractor, over a shifting landscape covered in fog, against deadly opposition, where the billiard balls are constantly moving and interacting—and worse—they have minds of their own. But in this case, the use of a pool cue seems even more futile, and shaping the environment becomes more pivotal to the desired transformation.

The awakening movements in Iraq, which began in Anbar Province in 2005, are a good example of how self-organisation can be exploited during conflict. In 2007, well known US security analyst Anthony Cordesman wrote of Iraq:

> If success comes, it will not be because the new strategy President Bush announced in January succeeded, or through the development of Iraqi security forces at the planned rate. It will come because of the new, spontaneous rise of local forces willing to attack and resist Al Qa'ida, and because new levels of political conciliation and economic stability occur at a pace dictated more by Iraqi political dynamics than the result of US pressure.[15]

By funding the salaries of ad-hoc coalitions based on organic informal power structures between tribal Sheikhs, the United States was able to amplify a natural source of resistance to al-Qaeda within the system. Although the rise in power of armed militias may present longer term challenges to state-building, this set of problems is still preferable to the problems facing Iraq prior to the Sunni uprising against al-Qaeda in 2005.

Many valuable lessons on adaptation can be found within the life sciences.

5. ADAPTATION IS THE BEST WAY TO COPE WITH COMPLEXITY

If the challenges of complexity start to seem overwhelming, it is important to remember the endless source of inspiration we have for how to thrive in the face of complexity: life. In *Jurassic Park*, the fictional mathematician Ian Malcolm, a chaos and complexity theorist, remarked that 'the history of evolution is that life escapes all barriers. Life breaks free. Life expands to new territories. Painfully, perhaps even dangerously. But life finds a way.'[16] Malcolm is describing the unprecedented

capacity of life for adaptation. Many valuable lessons on adaptation can be found within the life sciences.

The adaptive immune system is a vast distributed network of autonomous agents defending the organism against a wide variety of continually evolving pathogens. It must first perform the function the military calls 'identification friend and foe' to distinguish between self and non-self molecules. Some pathogens, like the parasites that cause malaria, actively evade detection by following Mao's dictum that the guerrilla must move amongst the people as a fish swims in the sea (immunologists call this 'intracellular pathogenesis'). Others use deception to misdirect the immune response. Pathogens engage in black market racketeering (technically they use a 'type III secretion system') by building hollow tubes to extract proteins from the host, which they then use to shut down defences. The immune system is able to recognise novelty, develop innovative counters, upgrade and update the agents, mass effects and intensify concentrations of the best agents to cope with the identified threat, and maintain a long-term memory that triggers a strong response if the same pathogen is encountered again. Perhaps even more impressively, it does all of this without any central guidance or control.

Turning to evolution, organisations can learn from organisms how to better target innovation while preserving essential functions, in order to better anticipate and prepare for future challenges and opportuni-

Understanding how to evolve the mechanisms of evolution has profound implications for the military.

ties. Scientists used to assume that Darwinian evolution was a 'blind' process driven by random mutation. Recently, molecular biologists have found evidence that variation is far from random, and have hypothesised that genomes actually anticipate challenges and opportunities in their environment. The evolution of 'evolvability' describes how genomes develop 'strategies' that accelerate the rate of evolution by carefully targeting variation. For example, there are mechanisms that focus variation to create 'hot spots' of genetic change, and useful segments of DNA can be identified and reused to create 'interchangeable parts'.[17] The genome appears capable of modulating evolution to better preserve critical functions in tact while focusing variation in those regions most often exposed to environmental flux. Understanding how to evolve the mechanisms of evolution has profound implications for the military. By applying adaptation to the adaptation process itself, second order adaptation would enable the military to get better at adapting over time.

In between the rapid adaptation of the immune system and the slow evolution of species, biology is full of systems that learn at both the individual and collective level. One study of learning of particular relevance to defence is Dörner's experiments in the

psychology of complex decision-making.[18] Dörner's method consists of immersing participants in a complex microworld simulation, where all of the variables have interdependencies and are connected by feedback loops. For example, in one micro-world the participants were installed as the mayor of a fictional town called Greenvale. Dörner found that even with dictatorial powers and the best of intentions, most—but not all—participants failed miserably. This prompted Dörner to attempt to distinguish between good and poor actor behaviour, identify the common cognitive traps that complex problems present, and develop a theory of how emotions impair rational decision-making under stress. Recent experimentation in Australia between DSTO, the Army and the University of South Australia, and international collaboration with the School of Advanced Military Studies and the Institute for Defense Analyses in the United States, are examining whether it is possible to improve adaptability through mentored game playing using Dörner's microworlds. The hypothesis is that a combination of theory, practice and reflection can help to improve learning within a complex situation, thereby enhancing individual adaptability.

In spite of the vast differences between these examples, a simple model captures the basic form of all adaptive mechanisms. VSR stands for variation and selective retention.[19] Without an internal or external source of variation, there is no possibility of change, so variation is an essential prerequisite for adaptation. Selective retention inhibits some variants (negative feedback) and reinforces others (positive feedback) with a bias towards retaining fitter variants. In simple terms, adaptation is nothing more than a principled and sustained application of trial and the elimination of error.

6. ADAPTATION REQUIRES CONTINUAL REFINEMENT OF SYSTEM-LEVEL TRADE-OFFS

If adaptation is the best way to cope with complexity, then how do we get more of it? Unfortunately, adaptation is not something you can just buy off the shelf. Adaptability is not contained in any single component, and it cannot be separated from the other functions of the system. The sources of variation, selection and retention must permeate the organisation and be connected in the right ways. Adaptation is a sort of 'ghost in the machine', or in the terminology of complex systems science, adaptability is an emergent property. If we want to improve adapt-ability, we need to take a systemic approach. This means understanding the system as a whole, in the context of its environment and its purpose, and deliberately considering trade-offs in the way the system is organised.

Trade-offs exist because there is no one right way to organise a system. The best way to organise depends on the context, which is in constant flux. There are a number of trade-offs that have been identified within complex systems science. Most of them are not new. There are, however, two main differences in how trade-offs are treated from a complex systems perspective.

Firstly, a complex systems approach insists on applying trade-offs to the system as a whole. This is because a system that is adaptive at one level may be brittle and unresponsive at the next level up. For example, a high rate of individual learning is no guarantee that any organisational learning is taking place. If force adaptivity is the real requirement, then trade-offs must be considered at the force level and not constrained to components of the force. While this guideline sets the scale for assessing the relevant system qualities, it by no means limits interventions to the same scale. As our third insight emphasised, the multi-scale nature of complex systems means that in order to achieve adaptivity at the scale of the whole system, interdependencies across all scales of the system must be considered.

> Adaptation is a sort of 'ghost in the machine', or in the terminology of complex systems science, adaptability is an emergent property.

Secondly, complex systems science takes a multidimensional approach to managing trade-offs. Consider the trade-off between cooperation and competition. This is often treated as a zero sum game. If you want to make an industry more competitive, according to conventional wisdom, you have to limit cooperation. The trade-off consists of selecting a point along the spectrum from pure competition to pure cooperation. However, this spectrum is a simplification. In reality, there are many different ways to combine competition and cooperation. These combinations differ across multiple dimensions, and the trade-off between competition and cooperation is not pitting one against the other, but rather how to navigate within this multidimensional space. The trade space contains possibilities where competition and cooperation are synergetic and mutually reinforcing. Yaneer Bar-Yam exemplifies this complex systems perspective when he explains competition and cooperation in a team sport like basketball from a multi-level perspective.[20] Players compete for places in the basketball team. The team then cooperates to compete against the opponent. Teams compete, but they also cooperate as a league to compete for viewers against other sports. Even though sports compete for viewers, they cooperate on issues like anti-doping to compete with other forms of entertainment. In this example, provided competition and cooperation are carefully separated in time, cooperation at one level improves the quality of competition at the next level up.

A list of complex systems design trade-offs is provided in Table 2. Each of these trade-offs takes place in a multidimensional trade space, and they are not independent of one another. It is beyond the scope of this paper to provide a detailed discussion of these trade-offs. They are included to make the point that in spite of the simplicity of the VSR model of adaptation, there are many subtle details that influence how

adaptive a system is in practice. This is good news, because it suggests many ways for improving the adaptability of the force.

The question that Table 2 raises is how do we know where to be in trade space for all of these interdependent factors in the light of the irreducible uncertainty and unpredictability of war? An answer from the discussion of the fifth insight above is to apply adaptation to the process of becoming more adaptive. This means to be

Table 2. Trade-offs in complex systems design

Trade-off		Description
Adapted	Adaptability	Adapted to current context or adaptable to future contexts
Exploration	Exploitation	Exploit the current best strategy or explore alternatives
Competition	Cooperation	Agents compete to achieve individual goals or cooperate to achieve a shared goal
Independence	Interdependence	Agents separated to maintain independence or connected to create interdependence
Innovation	Integration	Organisational orientation towards innovation and creativity or integration and control
Bottom up	Top down	Decision-making and change initiated from the top of the hierarchy down or from the bottom up
Decentralised	Centralised	Control is centrally coordinated or independently implemented in parallel
Specialisation	Multitasking	Agents are heterogeneous and highly specialised or homogeneous and able to perform multiple functions
Induction	Deduction	Agents act on rules generalised from past experience or by deducing logical consequences of assumptions
Deterministic	Random	The system's behaviour is completely determined by the input or uniformly random regardless of the input
Chaos	Order	System is unstable and changes quickly or system is stable, ordered and robust to perturbation

adaptive, we must be able to continually refine these system-level trade-offs. However, it should be noted that this prescription rolls off the tongue far easier than it is implemented in practice. Resourcing is an obvious hurdle, but probably more serious is the ability to implement desired changes in force level design, when moving in trade space has implications that cut across programs and services at multiple scales. This affects decisions owned by many individuals who cannot simply be compelled to change their internal policies. The difficulty of this challenge, however, in no way reduces the importance of force level adaptivity as an objective.

> … complex systems science takes a multidimensional approach to managing trade-offs.

7. IT IS EASIER TO DESIGN ENVIRONMENTS THAT FOSTER ADAPTATION THAN TO DIRECTLY IMPOSE IT

The paradox that confounded effects-based operations was that complexity increases the incidence of second and third order effects (because of interdependence) while simultaneously decreasing our ability to predict those effects (because of novelty-generating mechanisms). The way to resolve this apparent paradox is to realise that prediction is neither particularly useful nor necessary for effective interventions in a complex adaptive system.

Once again, a metaphor will help illustrate the change in mind set towards harnessing a complex adaptive system. Consider the difference between throwing a bird and throwing a rock.[21] A rock follows the laws of physics, which allows prediction of the trajectory of the rock based on knowledge of the angle and velocity of the throw (the initial conditions). In contrast, knowing the initial conditions when a bird is thrown does not help to predict the trajectory or final destination of the bird. To restore predictability, we could tie the wings of the bird, so that it behaves more like a rock, but this seeks to control complexity by eliminating it. Instead, if we provide an attractor for the bird, such as a feeder, and some boundaries, such as a fence, then the bird may end up where we want it, even though we cannot predict how it will get there. Better yet, by training the bird to associate its goals with the owner's goals, falconry takes advantage of the learning capacity of the bird to perform dazzling feats, catch prey and return to hand.[22]

Predictability is important for the control of complicated systems. However, complex adaptive systems contain goal-directed autonomous agents, which are already capable of controlling themselves. In our discussion of the fourth insight above, we raised the possibility of changing the landscape of the environment using informal mechanisms. Changing the environment of a complex adaptive system

modifies the distribution of incentives, which encourages different patterns of behaviour, and is a more indirect way of influencing the system. If the goals of the agents are understood, incentive modification may be a far more effective way of transforming patterns of behaviour than attempting prediction-based control. This requires a change in mindset away from trying to impose order on chaos towards harnessing complexity.

We are so deeply immersed in a torrent of incentive modifications that sometimes we barely notice them. Every time we turn on the television, drive to work, or engage in social interaction we are subject to incentive modifications. Free to air television creates a compelling incentive for us to watch advertisements, as well as associating the advertised product with enjoyment. City streets would be highly lethal if not for road rules in combination with the threat of their enforcement, which provides disincentives for socially irresponsible behaviour. One only has to compare the behaviour of a small child with that of an adult in an exclusive restaurant to notice the force of social pressures the child is oblivious to but that almost any adult has learned to observe. Every social situation has norms associated

> … prediction is neither particularly useful nor necessary for effective interventions in a complex adaptive system

with it, and actions that violate those norms (tantrums, nudity, honesty regarding uncomfortable truths) are often met with a severe response.[23] In a society that respects individual freedom and autonomy, incentive modification is a ubiquitous alternative to direct control, encompassing both formal (the legal system) and informal (social norms) mechanisms for influence.

In military affairs, the use of incentive modification is especially important in what is now called stability operations. Following his experience in the Philippines, Lieutenant Colonel Robert Bullard wrote of the importance of a judicious mixture of force and persuasion:

> This makes clearer the complex nature of pacification as a compromise between force and persuasion, rights and ideals, rude dictation and policy, and this complexity is what makes pacification difficult.[24]

Force alone will not bring stability, but neither can persuasion. It is producing the right combination of force and persuasion that is the art of stability operations.

This discussion provides one approach to resolving the difficulties that were raised within the sixth insight on system-level trade-offs. Rather than seeing the independent decision-makers within the system as an impediment to achieving force-level adaptivity, we could view them as the crucial engine for adaptation.

In order to move in design trade space, we would shape their behaviour by indirect means, by designing their environment and incentive structure, to promote coupling between their adaptation to the local context and overall force adaptivity.

In summary, complicated problems are problems where the 'devil is in the details' and the details are best managed by decomposing the problem into smaller pieces. Complex problems are caused by variety and interdependence, cross multiple scales and generate novelty. They resist solution by templating and trying to break them up ignores interdependencies, generating unintended consequences. Solving complex problems requires an adaptive approach across multiple scales that actively shapes the environment, manages system-level trade-offs and exploits self-organisation and emergence.

THE CONNECTION BETWEEN ADAPTIVE CAMPAIGNING AND COMPLEX SYSTEMS SCIENCE

This discussion refers to the Adaptive Army initiative and the 2006 version of *Adaptive Campaigning*, which at the time of writing is the current endorsed future land operating concept. The 'Adaption Cycle' is probably the most recognisable and most discussed feature of adaptive campaigning. The Adaption Cycle views conflict as a complex adaptive system and describes a cycle of interaction intended partly to change the system and partly to learn. The Adaption Cycle consists of four steps: Act, Sense, Decide, Adapt. The first step is action, because adaptation is proactive rather than reactive, and assumes that action will always occur in the face of uncertainty and the emergence of novelty. Action stimulates the system, which generates a response, such as forcing the adversary to unmask from below the discrimination threshold. The response provides

> In military affairs, the use of incentive modification is especially important in what is now called stability operations.

information about the system, which is the basis for decisions. The final step, adapt, emphasises that every action is a learning opportunity, consequently the Land Force may need to adapt. The adapt step explicitly considers learning how to learn, which we described above as second-order adaptation.

There have been misconceptions that the Adaption Cycle advocates acting before any surveillance or planning, and is an inferior and unnecessary variant of John Boyd's famous Observe Orient Decide Adapt (OODA) loop.[25] The first point is addressed by Lieutenant Colonel Chris Smith's article in this issue. The second misconception confuses the tactical focus of the OODA loop, born out of the experience of one-on-one duels of fighter pilots, with the more strategic ability

to adapt. Whereas the OODA loop underpins a faster decision cycle, the Adaption Cycle promotes a faster learning cycle. As William Owen notes,

> Just like learning to drive, speeding around the OODA loop will get you killed as surely as speeding on the road. What is more, the OODA loop urges you to speed in the fog of war and on the icy road of chance![26]

As simple models that emphasise the central importance of cyclical interaction and the temporal dimension of war, both OODA and ASDA have some explanatory power. However, it could be argued that the effectiveness of both models in capturing public attention has only inhibited discussion of the more important contributions of Boyd and those contained within *Adaptive Campaigning*.

Adaptive Campaigning is aware of and situated within a whole-of-government context, which promotes a systemic solution that integrates the elements of national power. It recognises the central role of influencing and controlling people and perceptions. *Adaptive Campaigning* introduces five interdependent and mutually reinforcing conceptual lines of operation (LOOs), recognising the need for concurrency in responding to complexity. The indigenous capacity LOO attacks the feedback loops within the system to ensure success is not transient, and promotes the formation of a stable self-regulating system.

> There have been misconceptions that the Adaption Cycle advocates acting before any surveillance or planning …

Adaptive Campaigning explicitly incorporates a number of concepts from the science of complex systems, explaining them in practical terms. An example is the taxonomy of adaptivity: operational flexibility, operational agility, operational resilience and operational responsiveness.[27] *Adaptive Campaigning* also recognises the trade-off between large scale effects and fine scale complexity described within complex systems science.[28] It articulates a symbiotic relationship between mission command and adaptive action. Mission command provides scope for subordinate commanders to apply judgement, while adaptive action exploits this freedom to better adapt to the local context.

Perhaps the biggest strength of *Adaptive Campaigning* is the recognition of the logical implications of an adaptive approach. The need for a new approach to the planning and design of operations is identified. *Adaptive Campaigning* also calls for a culture of adaptation. It describes an aspirational Army culture where education is valued, training environments are complex and ambiguous, a premium is placed on lessons learned, challenging understanding and perceptions is encouraged, and mistakes are acknowledged so they can be learned from.

CONCLUSION

The publication of *Complex Warfighting* in 2004 marked the recognition of the complexity of the operational environment by the Australian Army. In 2006, *Adaptive Campaigning* moved beyond admiring the problem to advance adaptation as the way to cope with complexity. 2008 saw the release of the Adaptive Army initiative, which extended the application of adaptation from operations to the way the force is structured. All of these documents are based on a deep understanding of complex systems science, integrated with an appreciation of national security policy, contemporary operational experience and military history.

> In 2006, *Adaptive Campaigning* moved beyond admiring the problem to advance adaptation as the way to cope with complexity.

This paper has presented seven insights from the forefront of complex systems science. Together, these insights open up a new paradigm that is significantly different to our traditional problem solving approach. The Joint Military Appreciation Process (JMAP) provides a systematic, analytical and highly structured process for rational decision making. The JMAP is extremely well suited to solving complicated problems. Complex problems cannot be approached in the same way as complicated problems. Complex problems require holistic multi-scale understanding, iterative adaptation, leveraging informal mechanisms, exploiting emergence, and shaping the environment. This is not as hard as it sounds, for many commanders and staff already do this to some degree without explaining it in these terms. However, we will not see the full power of this approach unless it is documented, trained and made widely available to the force.

Looking ahead, there is much work to be done to capitalise on the promising first steps made under the Adaptive Army initiative. The Australian Army needs to articulate the new approach to planning and designing operations called for in *Adaptive Campaigning*. It needs to review existing doctrine and define the conditions when linear mechanical processes are good enough and—more importantly—when they are not. If both linear and non-linear techniques have a place, which they should, then boundaries and transitions between approaches need to be specified to avoid confusion. Finally, the Australian Army needs to institutionalise an adaptive approach across all of the fundamental inputs to capability if it is serious about developing a culture of adaptation.

ENDNOTES

1   Eliot Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War*, Free Press, New York, 1991, p. 94.

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SOLVING TWENTY-FIRST CENTURY PROBLEMS WITH COLD WAR METAPHORS

RECONCILING THE ARMY'S FUTURE LAND OPERATING CONCEPT WITH DOCTRINE

LIEUTENANT COLONEL CHRIS SMITH

ABSTRACT

This article contends that the Army's *Adaptive Campaigning – Future Land Operating Concept* has important implications for the Army's doctrine, culture and officer education because, despite recent updates, current and developing doctrine has not yet fully reconciled some legacy linear concepts with *Adaptive Campaigning*'s non-linear foundations. While doctrinal metaphors and planning methodologies such as 'centre of gravity' and the Military Appreciation Process have enduring relevance, the imperative to deal with complex problems demands a more sophisticated approach to operational art and design.

There is always an easy solution to every human problem—neat, plausible, and wrong.

– Menken

INTRODUCTION

Adaptive Campaigning – Future Land Operating Concept states:

> … much existing Joint and Army doctrine tends to be focussed on the direct force-on-force encounters with the concept of a singular Centre of Gravity being one example. [*Adaptive Campaigning*] describes an environment in which this will not always be the case.[1]

This statement is a direct challenge to some of the Army's conventional wisdom. The statement reflects the notion that simple mechanical metaphors such as 'centre of gravity' have limited applicability to complex problems. *Adaptive Campaigning* argues that complex problems will be the norm rather than the exception in contemporary warfare, which will be characterised by multiple and diverse actors operating in complex terrain, leveraging the rapid diffusion of new technologies and highly lethal modern weapon systems to influence the allegiances and behaviours of individuals, groups and societies. This has important implications for the way the Army interprets operational problems, thinks about them, develops solutions to solve them and directs forces to execute solutions.

Adaptive Campaigning is a response to the evolving character of warfare. It provides a philosophical framework for resolving armed conflicts in complex operating environments and describes the 'actions taken by the Land Force as part of the military contribution to a whole of government approach'.[2] *Adaptive Campaigning* is the product of several years of work. Its key themes are: the influencing and shaping of perceptions, allegiances and actions of populations through a persistent, pervasive and proportionate response; the orchestration of a whole-of-government effort across five interdependent and mutually reinforcing conceptual lines of operation; warfare as a continuous meeting engagement and competitive learning environment requiring a flexible, agile, resilient, responsive, and robust land force; the fundamental requirement for close combat; and a command climate that challenges understanding and assumptions, founded in the philosophy of 'Mission Command'.

The purpose of this article is to highlight some of *Adaptive Campaigning*'s implications for the Army in order to generate some discourse to support the development of an implementation plan. This article does not address all of *Adaptive Campaigning*'s implications, many of which are addressed by ongoing initiatives. Instead, it looks into *Adaptive Campaigning*'s implicit logic, where some of the most significant implications lie. This article contends that *Adaptive Campaigning* has important implications for the Army's doctrine, culture and officer education because, despite recent updates, current and developing doctrine has not yet fully reconciled some legacy linear concepts with *Adaptive Campaigning*'s non-linear foundations.

The article assumes that the reader has a basic understanding of *Adaptive Campaigning* and begins by describing the differences between linear systems and complex adaptive systems. It then discusses the tensions and inconsistencies between *Adaptive Campaigning* and elements of *Land Warfare Doctrine*, specifically linear and mechanical metaphors such as 'centre of gravity', 'end-state', 'lines of operation' and the 'Effects-Based Approach'. The article then illuminates the limitations of doctrinal methodologies for designing and planning operations and campaigns to deal with complex problems, and posits that the US Army approach to campaign design might provide a basis for taking corrective action. The article concludes by contending that, while most of the legacy metaphors and planning methodologies have enduring relevance, the imperative to deal with complex problems demands a more sophisticated approach to operational art and design, which will have immediate implications for officer education and the Army's doctrine and culture.

> *Adaptive Campaigning* has important implications for the Army's doctrine, culture and officer education …

COMPLEX ADAPTIVE SYSTEMS, LINEAR SYSTEMS, AND LAND WARFARE DOCTRINE

Adaptive Campaigning has a thorough grounding in strategic and military history. Nevertheless, in light of the complexity of the contemporary battlespace, it also draws on the relatively new science of complex systems. A complex adaptive system is one 'whose properties are not fully explained by an understanding of its component parts'.[3] Complex adaptive systems are inherently unpredictable. Interdependent components of the system interact with each other in unpredictable ways. Discernable patterns and properties emerge from this mass of apparently random interactions at different levels and scales, which feed back into the system and influence the interactions of the agents themselves, as shown in Figure 1. Examples of emergent behaviour are the complexity and regularity of a termite mound, a flock of birds and warfare. All are characterised by patterns and regularity despite the absence of a single grand plan.[4]

As the environment within any complex system changes, agents and populations must change to ensure best fit. Any adaptation by an agent or population changes the environment, which in turn changes the agents and so on. Consequently, best fit is a transient state. Sometimes changes cause an imbalance in the system, resulting in a period of instability. For example, when a counterinsurgent wrests control of an area from an insurgent, the balance of power and the nature of relationships in that
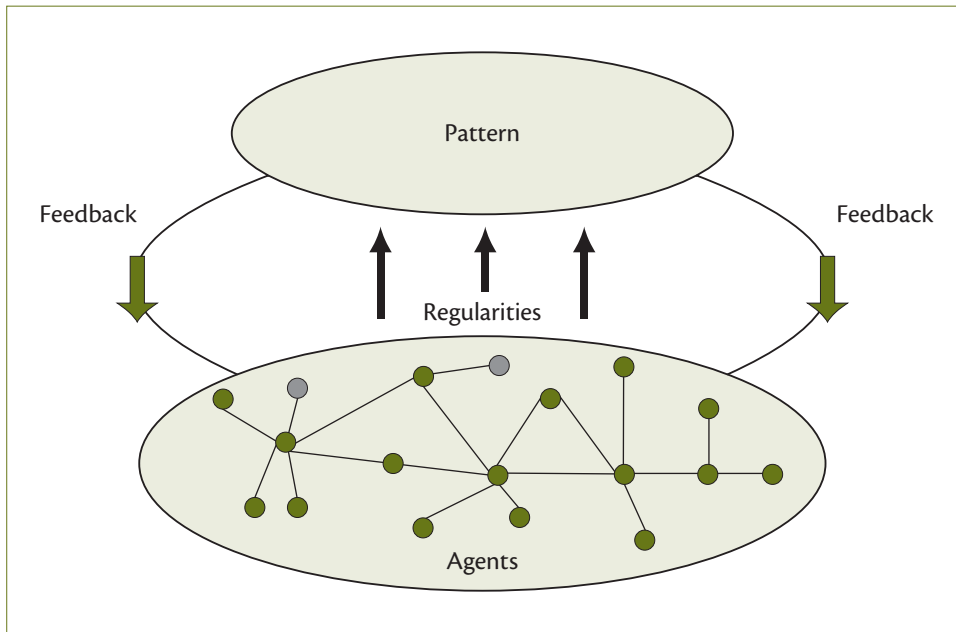
Figure 1. Complex Adaptive Systems[5]

area change, resulting in a period of flux before a new balance emerges. The form of the new balance is emergent and unpredictable.[6] The ability of an agent or popula-tion to adapt determines its success within the system. Not surprisingly, there are strong similarities between this description of complex systems and Carl von Clausewitz's and Thucydides' descriptions of war.

Adaptive Campaigning is inconsistent with the Army's *Land Warfare Doctrine* because important parts of *Land Warfare Doctrine* have a conceptual basis in linear and mechanical metaphors rather than complex systems theory. This linear tendency is, by and large, a by-product of the US Army's post-Vietnam catharsis and its subsequent rediscovery of operational art in the 1980s, when mechanical systems were a dominant paradigm. Unlike complex adaptive systems, the injection of energy into a linear system has a proportionate effect on the system, and knowledge of the initial conditions of a linear system allows for accurate prediction. Examples of linear systems are computers, telecom-munications networks and ground-based air defence systems. Warfare, on the other hand, is non-linear. When linear logic is applied to a non-linear system, such as in

> As the environment within any complex system changes, agents and populations must change to ensure best fit.

war, the results tend to be counterintuitive because outcomes defy proportionality.[7] For example, a single rocket propelled grenade strike on a Blackhawk helicopter in Mogadishu in October 1993 had disproportionate and unpredictable tactical, strategic and policy consequences. Therefore, mechanical and linear metaphors such as 'centre of gravity', 'end-state', 'lines of operation' and the 'effects-based approach' are inconsistent with *Adaptive Campaigning*.

CENTRE OF GRAVITY

The metaphor from which much of *Land Warfare Doctrine* derives its logic is 'centre of gravity'. Doctrine defines 'centre of gravity' as 'characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight'.[8] It is a reduction hypothesis that assumes military problems and military forces have a single point of control.[9] It makes a problem easy to deal with because it assumes that by addressing one or two things the 'solution to all other problems will follow automatically'. Professor of Psychology, Dietrich Dorner, argues:

> A reduction hypothesis of this kind, tying everything to one variable, has, of course, the positive virtue of being a holistic hypothesis, which is desirable because it encompasses the entire system. But it does so in a certain way, namely, by reducing the investment of cognitive energy.[10]

Dorner claims that this type of hypothesis fails because it does not account for the unpredictable relationships between actors and the manifold feedback loops in a complex adaptive system.[11] *Adaptive Campaigning* accepts Dorner's claim, stating:

> While the Centre of Gravity construct remains valid to achieving an understanding of the key targetable critical vulnerabilities that exist … it is important to realise that each of the multiple actors and influences involved in the conflict may themselves have *one or more* Centres of Gravity.[12]

Complex problems have no central point of control. Still, the 'centre of gravity' metaphor is not without utility. There are many simple military problems, more often than not at the tactical level, for which 'centre of gravity' might apply. A straightforward battalion attack against a like adversary is one such example. However, the 'centre of gravity' metaphor is not universally applicable. *Land Warfare Doctrine* does not acknowledge the metaphor's limited domain of applicability. This lack of sophistication is likely to lead to flawed thinking about complex problems.

> Complex problems have no central point of control.

END-STATE AND LINES OF OPERATION

The associated concepts of 'end-state' and 'lines of operation' (as defined in doctrine, not *Adaptive Campaigning*) are also inconsistent with *Adaptive Campaigning* because they, too, are linear metaphors. End-state is 'a term used to describe a commander's desired outcome for the operation or the state which the commander wishes to exist when the operation is complete'.[13] Lines of operation is accorded two different meanings in developing *Land Warfare Doctrine*. In one instance, the use of the term is the same as *Adaptive Campaigning*, meaning interdependent domains of action that provide a conceptual framework for the conduct of operations.[14] In the second instance, lines of operation are described as something 'identified during operational design and defined during the planning process to progress towards the campaign goal through decisive points'.[15] In the second instance lines of operation are a linear pathway, leading to an end-state.

End-state and the pathway interpretation of lines of operation are important because they help to focus the efforts of military forces on the centre of gravity. However, they assume that before taking action it is possible to fully comprehend a given operational problem; recognise a clear, achievable and static end; and develop a workable sequenced solution. More importantly, both metaphors assume that the context within which a solution is sought is sufficiently stable for the particular end to remain relevant throughout. When addressing complex operational problems, it is not realistic to expect to have the right solution from the outset. The imperative to act means that the solution (including the end-state) will tend to be vague and not fully formed. The Iraq and Afghanistan wars are examples of this phenomenon. The policy aims, campaign objectives and war plans changed throughout the course of both conflicts. The current situations in both wars were not, nor could they have been, anticipated in advance. Therefore, rather than use the term 'end-state', *Adaptive Campaigning* uses the term 'accepted enduring conditions', implying that the goal is not a precise and static target.[16] Moreover, *Adaptive Campaigning* recognises that initial action, regardless of how well informed and purposeful it might be, will tend to be a best estimate based on incomplete understanding of a given problem.

The notion that initial actions are only ever a best estimate should come as no surprise to most experienced military professionals. No plan survives first contact with the enemy.[17] An implicit tenet of *Adaptive Campaigning* is that a problem's initial conditions are less important than the Land Force's ability to improve its performance over time.[18] Therefore, *Adaptive Campaigning*, specifically the 'Adaptation Cycle', assumes that there is no linear path to a desired end, because

> No plan survives first contact with the enemy.

a system's complexity will prohibit comprehension without interaction. Brigadier (retd) Justin Kelly and Dr Mike Brennan observe that:

> The [Adaptation Cycle] … accepts that combat is a complex adaptive system. As such it will develop emergent behaviour that cannot be usefully anticipated in advance. Only by iteratively and incrementally stimulating the system can its actual behaviour be at least partially understood and appropriate actions be taken to dampen undesirable emergent behaviours while positively reinforcing desirable ones. Stimulating the system requires that it be provided with energy by taking action. This is not an argument against the need for reconnaissance and planning; rather, it accepts that reconnaissance may provide facts and that planning needs to account for these facts, but that the battle that eventually emerges is entirely unknowable in advance.[19]

Kelly and Brennan's interpretation of *Adaptive Campaigning* has important implications for the form and use made of military plans because it implies that only after interacting with a system will the problem and the desired end fall into focus. Even then, the interaction may cause the problem and therefore the end to change again. Therefore, military plans are largely a common point from which to adjust and the act of planning, which leads to greater common understanding of a problem, is perhaps more important than the plan itself.

Figure 2 demonstrates the difference between the legacy doctrinal approach and the *Adaptive Campaigning* approach to planning and executing operations. The

> … the imperative of operational art is the pursuit of the right actions in relation to a fluid context.

existing approach assumes a range of initial conditions and paths that lead to an end state. According to this metaphor, the imperative is to choose the right path, or at some predetermined decision point, shift to another predetermined path. *Adaptive Campaigning*, on the other hand, assumes that the initial conditions are unimportant and the number of possible ends is many. The implicit imperative is continuous interaction with the dynamic problem to force circumstances toward a vague and shifting end. The latter paradigm takes account of an enemy exercising independent will whereas the former does not.

Figure 2 implies that operational art has a contingent nature. It is a dynamic activity characterised by the application of judgment to fluid problems rather than just a more sophisticated approach to campaign planning and design. Therefore, the imperative of operational art is the pursuit of the right actions in relation to a fluid context. Prussian Chief of the General Staff, Helmuth Von Moltke illustrated the idea as follows:

Strategy is a system of makeshifts. It is more than a science. It is bringing knowledge to bear on practical life, the further elaboration of an original guiding idea under constantly changing circumstances. It is the art of acting under the pressure of the most demanding conditions…That is why general principles, rules derived from them, and systems based on these rules cannot possibly have any value for strategy.[20]

Developing *Land Warfare Doctrine* captures, to some extent, the notions that plans are a common point of departure and that operational art has a contingent nature.[21] However, these ideas sit uncomfortably with linear metaphors such as 'end-state' and 'lines of operation' without some clarification of their limited applicability.

This tension has possible implications for officer education and training. The first implication is that greater emphasis should go to post h-hour decision-making rather than pre h-hour decision-making and planning. The second is that an institutional passion for study of the decisions and actions of wartime commanders is imperative. Only through study is the contingent nature of warfare revealed fully. Third, 'deliberate planning as a means for arriving at a start point'[22] is likely to take a different form than traditional planning, which aims at arriving at the complete solution.

THE EFFECTS-BASED APPROACH

The contingent nature of operational art poses a direct challenge to the 'Effects-Based Approach' to operations. While the Effects-Based Approach is not an explicit part of *Land Warfare Doctrine*, the Effects-Based Approach underwrites some elements of *Land Warfare Doctrine*. Examples include the targeting process in the developing
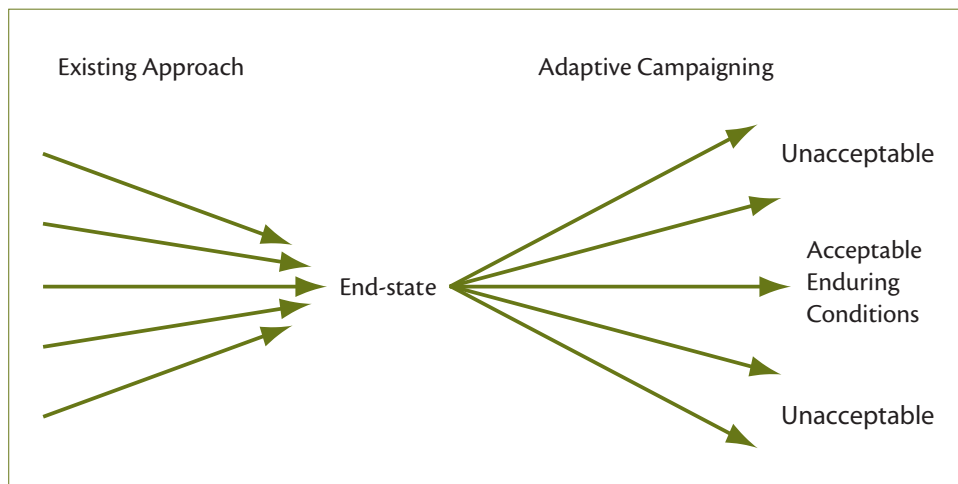

Figure 2. Linear and Non-Linear Approaches to Military Problems

counterinsurgency doctrine and some steps in the Military Appreciation Process.[23] An Effects-Based Approach is '*a way of thinking* to focus planning activities and the operational conduct on achieving an effect to gain an end state, rather than planning and organising activities'.[24] Its conceptual basis is the theory of 'Effects-Based Operations', which views military forces as akin to organic systems. The *sine qua non* of Effects-Based Operations is the paralysis of a military force from the targeting of critical nodes.[25] Like Effects-Based Operations, the Effects-Based Approach attempts to link causality from means through mechanism to effect in order to create a general cascading effect on an enemy's system.

The theory derives from the US Air Force and rests comfortably in the context of applying air power. The rationale is largely to ensure that apportionment and employment of limited assets is relevant and effective. It is an attractive idea and appeals strongly to the desire for stability and control, as well as managerial kinds of thought.[26] One of the theory's flaws is that it assumes an unachievable level of predictability because it overlooks the feedback loops and emergent properties of complex adaptive systems. Another flaw is that it requires an impossible level of knowledge about the enemy and the operating environment in order to know what things to take action against, through what mechanism action will generate the desired effect, and to what extent the effect occurred.[27] *Adaptive Campaigning*, on the other hand, assumes that a decision-maker will have incomplete knowledge of the enemy and the operational environment (the system). This lack of knowledge is a function of the inherent uncertainty of war, but is also a function of the tendency for contemporary adversaries to operate below the Land Force's detection threshold. Therefore, *Adaptive Campaigning* seeks to understand, as much as possible, the behaviour of the system through discovery actions rather than a detailed under-standing of the system's parts. Unlike the Effects-Based Approach, which focuses on specific outcomes and their possible cause, *Adaptive Campaigning* accepts that sometimes it is prudent to act without a clear idea of the effect in mind because action is normally necessary to learn, and leads to the creation or recognition of opportunities. It is, to some extent, a sophisticated version of Napoleon's approach, 'One jumps into the fray, then figures out what to do next.'[28]

> *Adaptive Campaigning* accepts that sometimes it is prudent to act without a clear idea of the effect in mind …

The primary influence of the Effects-Based Approach on *Land Warfare Doctrine* is the targeting process. Developing counterinsurgency doctrine defines targeting as 'the process whereby operational activity conducted within a [counterinsurgency] campaign plan is focused upon achieving specific effects in support of campaign

objectives or tactical actions'.[29] Targeting is an attractive process because its prescriptive and reductionist nature generates seemingly purposeful action in a simple and holistic manner. However, targeting assumes that there is some efficacy in considering systems and problems in terms of targets. Constraining thought by such a limiting paradigm in the face of a complex problem is likely to inhibit the range of solutions available to a military force. This paradigm and targeting's highly structured approach are antithetical to creativity, which is an important function of effective adaptation. Therefore, the Effects-Based Approach (and targeting in particular) is incongruent with *Adaptive Campaigning*.

Still, the term 'effect' is a useful part of the military lexicon. After all, some effects, such as the neutralisation of an enemy battle position with indirect fire, are predictable to a point. The associated concept of targeting is also very effective when the rationale is to best apportion and prioritise the employment of scarce capabilities such as air power and artillery. However, the metaphors are not universally applicable. This lack of sophistication is likely to lead to flawed thinking about complex problems.

PLANNING AND DESIGN

The Army's doctrinal planning methodology, the Military Appreciation Process, is a proven and highly reliable way of coordinating staff effort to derive adequate military plans in time-constrained environments. However, some of the steps of the Military Appreciation Process lose relevance when there is no single 'centre of gravity' (i.e., when a complex problem has no single point of control). For example, *The Military Appreciation Process, 2001* states that:

> the key activity in [step four of Intelligence Preparation of the Battlespace] is an assessment of the enemy [centre of gravity] and its [critical vulnerabilities] as a basis for subsequent development of the [decisive events].[30]

These decisive events become the framework on which a course of action is built. This step is a good example of the Military Appreciation Process' linear and methodical approach to problem solving. Its linear approach and its reliance on some of the linear metaphors discussed earlier, make it sub-optimal for solving complex problems.

In recognition of the inadequacies of its own military decision-making process, the US Army has turned to design theory. The US Army's Military Decision-Making Process (almost identical to the Military Appreciation

> *Australian Army design doctrine is undeveloped, particularly in light of the US experience.*

Process) proved to be inadequate at addressing context (solving the right problem), recognising changes in context (leading to adaptation), and spawning creativity (solving the problem well) in dealing with contemporary conflicts.[31] Consequently, in anticipation of its value, the US Army developed a sophisticated design methodology to compliment its Military Decision-Making Process. In an attempt to address similar problems, recent amendments to *Land Warfare Doctrine* include discussion of operational design. However, Australian Army design doctrine is undeveloped, particularly in light of the US experience. The Australian Army's undeveloped view of design is a handicap for planners addressing complex operational problems.

Recent doctrinal amendments address operational design in greater depth than ever before. However, the doctrinal approach to operational design is immature. It regards design as the process of problem framing and regards planning as the process of problem solving.[32] According to this paradigm, operational design is about analysis and understanding rather than solution or prescription, and sits apart from and occurs prior to planning. In fact,

> design is iterative, meaning it does not follow a linear sequence, and it does not terminate just because a solution has been developed … design is focused on solving problems, and as such requires intervention, not just understanding.[33]

Therefore, design is an ongoing activity that seeks to understand a problem and prescribe a solution. It is more than simply problem framing. The key difference between design and planning is that design is about solving problems and planning is about organising for action and controlling performance. This difference suggests that *Land Warfare Doctrine* emphasises organising and controlling action at the expense of developing and prescribing solutions.

While this misunderstanding of the role of design is important, the greater weakness is the lack of any particular methodology for designing. Design, by definition, takes place in all military planning activities, whether explicitly or not. The course of action development stage of the Military Appreciation Process is largely a process of design. However, the efficacy of treating design as an implied activity within planning rather than singling it out for thoughtful consideration is questionable. Without some sort of method, operational design will prove too difficult to teach and will never get anything more than lip service from the officer corps. Therefore, there may be some merit in reviewing the doctrinal decision-making processes with a view to a more sophisticated approach incorporating emerging design methodologies.

> Design, by definition, takes place in all military planning activities, whether explicitly or not.

THE PRIMARY IMPLICATIONS OF ADAPTIVE CAMPAIGNING

The tension between *Land Warfare Doctrine* and *Adaptive Campaigning* highlights the enduring and irreconcilable tension between two extreme approaches to warfare. One extreme is that practiced by the Germans from around 1870 to 1941. One might describe it as the 'follow-your-nose' approach. This approach emphasises flexibility, mission command, command forward, loosely coupled plans, simple orders, few objectives, authority pushed to the lowest levels and rapid exploitation of opportunities. Its weakness is that synchronisation is left largely to chance and its strength is that action tends to be congruent with context. The other extreme approach is the methodical approach epitomised by the French in 1940. This approach emphasises tightly coupled plans, centralised control, synchronisation, timetables, information, prediction and command from the rear. Its weakness is the tendency to fight the plan at the expense of adapting to a changing context; either failing to seize opportunities or following through with a plan well after circumstances made it irrelevant. The strength of the methodical approach is that synchronisation of effects and economy of effort are optimal. *Land Warfare Doctrine* fails to address the irreconcilable tension between the two extremes. Metaphors from both extremes sit side-by-side with no reference to the tensions that exist between them.

This tension is particularly stark in *Adaptive Campaigning* because its logic sits more or less in the 'follow-your-nose' camp, but the concept also resides within a strategic context that anticipates amphibious operations in a littoral environment. Amphibious operations by their nature require tightly coupled plans, high levels of synchronisation, timetables, centralised control, a heavy reliance on information and command from the rear. They sit at the other end of the spectrum. Moreover, their joint character means that an Effects-Based Approach has some merit. The implication is that *Land Warfare Doctrine* should reflect the strengths and weaknesses of both logics and articulate the tensions between the two. In particular, it should describe the limited domains of applicability of certain concepts and metaphors. This has important implications for officer education and training.

CONCLUSION

Adaptive Campaigning has important implications for the way the Army interprets operational problems, thinks about them, develops solutions to solve them and directs forces to execute solutions. Most of these implications are a consequence of the concept's recognition of the non-linear nature of war. Some important legacy doctrinal metaphors are inconsistent with the logic of *Adaptive Campaigning*, and existing design and planning methodologies are inadequate for dealing with complex problems. Yet, they maintain some enduring utility. Therefore,

Land Warfare Doctrine must reconcile two different logics based in two different approaches to warfare.

Still, clarifying old and new doctrinal concepts will not expunge the ingrained metaphors from the minds of officers trained in their usage. Moreover, the Army does not have a mature methodology for operational design. Therefore, *Adaptive Campaigning* has immediate implications for officer education and the Army's doctrine and culture, necessitating a review of the principal *Land Warfare Doctrine* publications and the officer-training continuum.

There are, therefore, three primary challenges. The first challenge is to bring together *Adaptive Campaigning, Land Warfare Doctrine* and Joint doctrine, and reconcile the differing logics in one coherent approach. The second challenge is to bring officer training and education into line with the new doctrine. The third and overarching challenge is to implement this change in an organisation that has its own stabilising feedback loops that will frustrate attempts to change it.

> *Land Warfare Doctrine* must reconcile two different logics based in two different approaches to warfare.

ENDNOTES

1   *Adaptive Campaigning: Army's Future Land Operating Concept*, Department of Defence, Canberra, p. 39.

2   Ibid, p. 27.

3   R Gallagher and T Appenzeller, 'Introduction', *Science*, Vol. 284, No. 5711, 1999, p. 79.

4   Peter Fryer, 'What are Complex Adaptive Systems?' <http://www.trojanmice.com/articles/complexadaptivesystems.htm>

5   Ibid.

6   Ibid.

7   A Kuruc, 'The Relevance of Chaos Theory to Operations', *Australian Defence Force Journal*, No. 162, September/October 2003, p. 5.

8   LWD 1, *The Fundamentals of Land Warfare*, Department of Defence, 2008, p. 48.

9   Reductionism is an approach to understanding complex things by breaking them down into their component parts and analysing the parts in order to understand the whole. In Carl von Clausewitz, *On War*, Michael Howard and Peter Paret (trans. and ed.), Princeton University Press, Princeton, 1989, p. 485, Clausewitz made the linear and proportional basis of centre of gravity explicit: 'The scale of a victory's sphere of influence depends, of course, on the scale of the victory, and that in turn depends on the size of the defeated force. For this reason, the blow from which the

broadest and most favourable repercussions can be expected will be aimed against that area where the greatest concentration of enemy troops can be found.' The centre of gravity was introduced to military theory by Clausewitz as an analogy to the concept first invented by Archimedes. In mechanics, the centre of gravity is a single point where the behaviour of an object acts as if all its mass were concentrated at this point. Knowing where the centre of gravity is makes predicting the movement and direction of physical objects easier. Clausewitz argued that armies, too, have a centre of gravity at the point of greatest concentration of troops, and that all energy should be expended against this point, because it is the hub of all power and movement.

10   D Dorner, *The Logic of Failure: Why Things Go Wrong and What We Can Do to Make Them Right*, Metropolitan Books, New York, 1996, pp. 89–90.

11   Ibid, p. 90.

12   *Adaptive Campaigning*, p. 41.

13   LWD 3-0, *Operations (Developing Doctrine)*, Department of Defence, 2008, p. 26.

14   Ibid, pp. 2-60–2-65.

15   Ibid, p. 2-64. Lines of operation were once literally geographical lines. In their revived form, as used by General Franks in Iraq, lines of operation decompose an operation into functional components. The famous Franks chart is found at <http://herdingcats. typepad.com/my_weblog/2005/08/teams_centers_a.html>. The ubiquity with which lines of operation have been unthinkingly replicated since Franks used this technique is reminiscent of Clausewitz's discussion of Methodism. It is an oversimplified form of categorisation that hides inter-relationships, interdependencies and nonlinearities. The Adaptive Campaigning variant on lines of operation is much better, because it attempts to emphasise interdependencies. However, the 'line' part of the label still retains a misleading metaphor.

16   Douglas O Norman and Michael L Kuras, 'Engineering Complex Systems', The MITRE Corporation, January 2004, <http://www.mitre.org/work/tech_papers/ tech_papers_04/norman_engineering/norman_engineering.pdf>

17   Originally in Helmuth Von Moltke, *Militarische Werke*, Vol. 2, Part 2, pp. 33–40. Found in Daniel J Hughes (ed), *Moltke on the Art of War: Selected Writings*, Presidio Press, New York, 1993, p. 45.

18   A M Grisogono and A Ryan, *Operationalising Adaptive Campaigning*, 12th ICCRTS, Newport, p. 20, <http://www.dodccrp.org/events/12th_ICCRTS/CD/html/ papers/198.pdf>

19   J Kelly and M Brennan, *Distributed Manoeuvre: 21st Century Offensive Tactics*, Land Warfare Studies Centre, Canberra, 2009, p. 26.

20   Dorner, *The Logic of Failure*, p. 97.

21   *LWD 1*, p. 52.

22   Ibid.

23   For example, LWD 3-0-1, *Counterinsurgency (Developing Doctrine)*, Department of Defence, 2008 says 'Targeting is the process whereby operational activity conducted within a COIN campaign plan is focused upon achieving specific effects in support of campaign objectives or tactical actions. It is important to understand that targeting is undertaken in all operations, and not just physical (lethal) attacks against insurgents.'

24   ADDP 3.0, *Operations (Provisional)*, Department of Defence, 2008, p. 2-1. [emphasis added]

25   J Warden, *The Air Campaign*, National Defense University Press, Washington DC, 1988.

26   Adam Elkus, 'Report: The End of Effects-Based Operations?', *Rethink Security*, 22 August 2008, <http://rethinkingsecurity.typepad.com/rethinkingsecurity/2008/08/report-the-end-of-effects-based-operations.html>

27   General J N Mattis, Commander US Joint Forces Command, in a memorandum for US Joint Forces Command, 28 May 2009.

28   Dorner, *The Logic of Failure*, pp. 160–61.

29   *LWD 3-0-1*, p. 7-13.

30   LWD 5-1-4, *The Military Appreciation Process*, Department of Defence, 2001, p. 3-35.

31   From a brief by Dr Alex Ryan to a US Army School of Advanced Military Studies seminar, 2008.

32   *LWD 3*, p. 2-4.

33   S Banach and A Ryan, 'The Art of Design: A Design Methodology', *Military Review*, March–April 2009, p. 105.

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ADAPT OR DIE

OPERATIONAL DESIGN AND ADAPTATION

LIEUTENANT COLONEL TRENT SCOTT

ABSTRACT

The operational level of warfare provides the logic and rationale that determines the tactical actions necessary to achieve strategic goals. The Australian Army's approach to operational design—embodied in the Military Appreciation Process—has not kept pace, however, with the increasing scope and complexity of contemporary military operations. However, 'design'—a new approach to operational planning now on the ascendant in the US Army and Marine Corps—promises to incorporate the elements of creative and critical thinking required to design operations that will succeed on today's complex battlefields. Without this new approach to the operational level of war, Australia's ability to pursue its own sovereign goals will diminish and eventually disappear entirely.

School trains us never to admit that we do not know the answer, and most organisations reinforce the lesson by rewarding people who excel in advocating their views, not inquiring into complex issues … Even if we feel uncertain or ignorant, we learn to protect ourselves from the pain of appearing uncertain or ignorant. That very process blocks out any new

understandings which might threaten us. The consequence is what [is called] 'skilled incompetence'—teams full of people who are incredibly proficient at keeping themselves from learning.[1]

– Peter Senge

'Adapt or die' has a particular tactical immediacy on today's increasingly complex, lethal, diverse and uncertain battlefield. We intuitively understand the enemy is adaptive, more than willing and readily able to change tactics, techniques and procedures in response to our actions. We also know the inability to adapt tactically will inevitably lead to failure and, on a personal level, perhaps death or serious injury. Witness the counter-IED battle in both Iraq and Afghanistan. But success at war and warfare depends on more than being adaptive to ensure we are *doing things right*. More so, success depends on us consistently and cumulatively *doing the right things*. This depends on a continuous and iterative adaptation of our operational approach to ensure its relevancy and effectiveness. This is an altogether different scale of adaptation than tactical adaptation.

The Australian Army typically has been proficient at tactical adaptation. Adapting our operational approach to ensure we are doing the right things does not come as easily. This article argues that getting the operational approach consistently closer to right than wrong depends on a methodology for applying critical and creative thinking to understand, visualise and describe complex problems and developing iterative approaches to solving them.[2] This methodology is known as operational design and is currently an evolving approach to the array of complex problems the military is increasingly being called upon to manage.

The Australian Army's own doctrinal approach to 'design', and indeed the ADF's as well, is mechanistic, reductionist and inadequate for an increasingly complex battlespace and array of missions. Current doctrine relies on

> As well as irrelevant doctrine, the Australian Army does not adequately educate its leaders or planners to deal with complexity.

concepts such as 'centre of gravity' and 'decisive points', whose premise that 'sufficient connectivity exists among the various parts of the enemy to form an overarching system (or structure) that acts with a certain unity' must be questioned in light of what we now know about complexity.[3] And, in practice, such concepts tend to be elevated above the need to define the true nature of the problem and associated operational objectives required to change the operating environment positively over time in our favour. As well as irrelevant doctrine, the Australian Army does not adequately

educate its leaders or planners to deal with complexity. To ensure we are better able to design, plan and execute operations that are inherently relevant and adaptive and that achieve our operational and strategic objectives, the Army should incorporate the art of operational design into its everyday practice. In support the Army must:

- consciously promote a culture that continually challenges our understanding and perceptions, thinks long-term and holistically, and supports working with ambiguity and complexity
- institutionally enhance critical and creative thinking skills, and
- adapt our doctrine to incorporate operational design and make it relevant for the challenges of today and the immediate future.

DEVELOPING DESIGN MOMENTUM

In the US Army there has been significant intellectual effort expended recently towards developing a useful operational design methodology that is suitable for incorporation into doctrine and general practice. In 2004, the US Army's Training and Doctrine Command (TRADOC) visited the Operational Theory Research Institute (OTRI) in Israel to discuss Systemic Operational Design (SOD). SOD is the Israeli Defence Force's (IDF) methodology for operational design and is mostly the brainchild of retired Brigadier Shimon Naveh.[4] This was followed by the annual US Army Title X Unified Quest Capstone Wargames of 2005 and 2006 incorporating SOD and, in December 2006, the much-publicised FM 3-24 *Counterinsurgency* manual was published, with an entire chapter devoted to campaign design. The IDF version of SOD was 'Americanised' in 2007/08 with the publication of the TRADOC Pamphlet *Commander's Appreciation and Campaign Design* (CACD), which does an excellent job of distilling SOD into useful and practical language. This was followed with a more evolved and practical design methodology articulated in an issue paper released by Army Headquarters titled *Issue Paper: Army Design Doctrine – Design (Final Draft – Pre-Decisional)*, 29 March 2009. The purpose of this issue paper was to promote Army-wide debate on an appropriate design methodology to be incorporated into the new FM 5-0 *Army Planning and Orders Production* doctrine, which was due for release in October 2009.

Throughout this period the US Army's School of Advanced Military Studies (SAMS) deliberately incorporated SOD and subsequent evolutions of operational design into their curriculum and encouraged debate on the utility of design as an approach to solving complex operational problems. In the last eighteen months SAMS has been at the forefront of the public debate on operational design.[5] Currently, SAMS includes twenty-four lessons on design and critical thinking in its curriculum, as well as four weeks of design practical exercises based on real world operational problems. The US Army War College has also included operational

design and design practical exercises into its curriculum, although not to the same extent as SAMS. On a practical level, US Combatant Commands have begun establishing discrete, purpose-built permanent design teams as part of the commanding general's 'inner sanctum', and SAMS graduates are being encouraged to use design in a deliberate manner on operations in Iraq and Afghanistan.

Both the British and Canadian armies are paying close attention to the developments in operational design, knowing that should the US Army adopt operational design formally into its doctrine it will only be a matter of time before they do as well. Both armies participated in strength in the recent US Army experiment OmniFusion 09, which included as one of its major outcomes the examination of whether design was appropriate at the tactical level (US Army Division) in a time constrained operational environment. The Canadians are looking to incorporate design into their own doctrine in 2010. The recently released UK Joint Publication *Campaigning* devotes large sections to operational design consistent with the key themes detailed in the US Army's *Issue Paper: Army Design Doctrine*, although without mentioning the word 'design'.[6] It is also worth noting the British Army has taken the deliberate step of posting all SAMS graduates into Brigade Chiefs of Staff positions (equivalent to a Brigade Major in the Australian Army). The consistent comment from these graduates is that the design methodology and associated critical thinking skills package taught at SAMS significantly enhances their confidence and competence in developing brigade plans.

The USMC is currently debating how best to incorporate design methodology into its doctrine. The Director of the USMC School of Advanced Warfighting (SAW), Lieutenant Colonel Alex Vohr, early this year published an article in the *Marine Corps Gazette* arguing that the design methodology advanced in *Commander's Appreciation and Campaign Design* provided little enhancement to the Marine Corps Planning Process (MCPP) and was therefore redundant for the Marines.[7] On 14 August of this year, Headquarters United States Marine Corps released a functional working draft of its revised MCPP with significant changes aimed at explaining design and exposing a wider Marine Corps audience to the design discussion preparatory to a formal revision of the publication in 2010. A primary change in this revised working draft is that Chapter 1 of the MCPP has been re-named from 'Mission Analysis' to 'Problem Framing'. This chapter has been re-written in a similar manner to the UK *Campaigning*: 'design' is woven throughout and the point is explicitly made that design

> … the design methodology and associated critical thinking skills package taught at SAMS significantly enhances their confidence and competence in developing brigade plans.

is appropriate to problem solving at all three levels of war.[8] Unfortunately, the reality is many Marines (and US, British, Canadian and Australian Army officers) do not apply their respective planning processes in the spirit in which they were written. As one Marine Corps planner stated on return from his second tour of Iraq as a planner:

> Before we deployed this time around [2008–2009] we 'designed' our campaign plan and operational approach. We didn't call it 'design' but that is what we did. Unfortunately, once in theatre and underway, we never forced ourselves to re-visit this design, and commanders tended to quickly fall back on predictable planning methods …[9]

Another USMC officer and a recent graduate of SAMS wrote in an email to the SAW Director that in his opinion:

> … there are many erroneous criticisms of Design: systems theory is a pseudo science, Design is just MDMP/MCPP 'on steroids', Design is merely IPB … Even though good commanders will intuitively design and frame problems, I believe a more formal cognitive methodology doesn't hurt. From personal experience, I can confidently say that design is different than planning and the Design 'process' itself is effective at breaking down planning stove-pipes and improves the overall performance of an OPT [Operational Planning Team] …[10]

'Design' features in both ADF and Army doctrine, but at nowhere near the level of sophistication compared with the latest methodology detailed in the US Army's CACD or Design Issue Paper. Typically, in ADF doctrine, design is associated with campaign design; however, as will be discussed, it is reductionist, mechanistic, and too generic to provide any real utility.[11] It certainly does not support dealing with complex operational problems in any meaningful way. Similarly, the attempt to write design into the draft of LWD 3-0 *Operations (Developing Doctrine)* and LWD 3-1 *Counterinsurgency* fails on all counts to provide a useful methodology or describe why design might be necessary.

> Typically, in ADF doctrine, design is associated with campaign design …

WHY DESIGN?

> *Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them.*[12]
>
> – Laurence J Peter

Much of the motivation behind the US Army's push to develop an appropriate design methodology to support solving complex operational problems comes from three main stimuli. The first is that with the value of hindsight a number of senior US Army

officers have recognised that the planning for both Afghanistan and Iraq was not suffi-
ciently comprehensive and failed to account adequately for the shift in the character
of both of those wars. The second stimulus is the growing recognition that warfare
today is becoming increasingly complex, operational problems are more 'wicked'
than in the past, and that dealing with this complexity requires a different approach
to problem solving. Finally, and related to the previous two stimuli, is the widespread
recognition that to be successful in an era of persistent and complex conflict the Army
needs to be inherently adaptive and become a true 'learning organisation'. It is worth
examining each of these in some detail in order to provide context before looking at
what operational design is and how it facilitates adaptation. This context provides a
number of stark lessons for the Australian Army as we continue to conduct operations,
particularly in Afghanistan, and as we move towards an *Adaptive Army*.

THE RIGHT OPERATIONAL APPROACH

> *Everybody likes to fight the war that he knows best; this is very obvious.*
> *But in Vietnam we fight a war that we don't 'know best.' The sooner this*
> *is realised the better it is going to be.*[13]
>
> – Bernard Fall, 1964

Tactics and strategy are symbiotically linked by the operational level of war. The
operational approach undertaken within a theatre of war, such as Iraq or
Afghanistan, Timor-Leste or the Solomon Islands, provides the framework for and
purpose of our tactics. Designing an operational approach that translates strategic
objectives into tactical actions that are coherently arranged by a commander in time,
space and purpose is arguably the essence of operational art.[14] If the operational
approach is not appropriate, no matter how good your tactics you will not be successful.

The British in the early years in Malaya were convinced large battalion plus-sized sweeps designed to 'break insurgent concentrations and bring them to battle before they are ready' was the necessary operational approach to end the Malayan insurgency rapidly.[15] As one historian of the Malayan Emergency explains:

> The British did not start
> having success until
> the Briggs Plan was
> operationalised in 1950.

> The predilection of some army officers for major operations seems incurable … On
> arrival in Malaya, they would address themselves with chinagraphs to a map almost
> wholly green except for one red pin: 'Easy,' they would say. 'Battalion on the left, battalion
> on the right, battalion blocking the end, and then a fourth battalion to drive through.
> Can't miss, old boy.'[16]

The British did not start having success until the Briggs Plan was operationalised in 1950. This plan not only restructured the British command and control apparatus in Malaya, but also placed a priority on winning the support of the population to separate the insurgents from their support bases rather than defeating the insurgents by force of arms.[17] Small patrols, acting on precise intelligence, supporting or supported by British and indigenous police forces, became the order of the day. The Briggs Plan was subsequently adapted the following and successive years by Sir Gerald Templer as the situation began to change in favour of the British. In the end it became the operational framework on which British success depended.

Not surprisingly, Vietnam provides an excellent case study of the inherent dangers of a non-existent or inappropriate operational approach failing to provide the right context for tactics and aligning tactical actions to achieve operational and subsequently strategic objectives. This is no better illustrated than the reported conversation between US Army Colonel Harry Summers and a North Vietnamese counterpart in Hanoi in 1975: 'You know, you never defeated us on the battlefield,' said the American colonel. The North Vietnamese colonel pondered this remark a moment. 'That may be so,' he replied, 'but it is also irrelevant.'[18]

Of course, as the bridge between strategy and tactics it makes sense that the appropriate operational approach depends on an equally appropriate overarching strategy. As a retired US Special Forces veteran of Vietnam suggests:

> When you're facing a counterinsurgency war, if you get the strategy right, you can get the tactics wrong, and eventually you'll get the tactics right. If you get the strategy wrong and the tactics right at the start, you can refine the tactics forever but you still lose the war. That's basically what we did in Vietnam.[19]

But, as we will see, the methodology of operational design promotes a continuous, frank and robust dialogue between those responsible for the strategy and those responsible for the operational approach. This dialogue has the potential to mitigate any such disconnect between tactics and strategy.

More recently, according to Dr Michael Evans the 'lost victories' of the 2001–03 US-led 'first phase' campaigns in Afghanistan and Iraq respectively are a cautionary warning of reliance on strategy empowered by information-age tactics.[20] The operational approach adopted once the centre of gravity—the Iraqi Republican Guard—had been neutralised, was heavily weighted towards force protection and counter-terrorism at the expense of protecting the population. Later, under General Casey during 2005–07, the operational approach was adapted slightly to emphasise fast tracking the development of Iraqi Security Forces while concurrently reducing the presence of US forces in the cities.[21] Neither operational approaches worked, and there was a reluctance to make any significant adaptations. In effect, up until the celebrated 'surge' in Iraq during 2007–08 and General Petraeus taking command of

the war, the operational approach undertaken by Coalition Forces in Iraq (primarily US forces) was the totally wrong approach.[22]

In Afghanistan, too, the operational approach has not promoted best practice tactics that are contextually appropriate. Many coalition forces do not actively and consistently patrol their areas of responsibility or, when they do patrol, they sally forth from Forward Operating Bases for a quick-order patrol that has very limited enduring effect due to a lack of reinforcement of 'holding' operations and often inflames local tensions rather than creating an atmosphere of progress or stability. In too many cases, the tactical methods employed by coalition forces focus more on self-protection rather than on protecting local communities. Actions such as aggressive driving of up-armoured vehicles in built-up areas,

> In Afghanistan, too, the operational approach has not promoted best practice tactics that are contextually appropriate.

defaulting to the use of air-delivered weapons when contacted by enemy forces rather than adopting a more proportional response of dismounted fire and manoeuvre, and a reluctance to share information or lessons learned with ANA and ANP partners contribute to psychologically separating the Coalition Forces from the people they should be protecting.[23] This does not represent best practice tactics within a sound operational approach.

Some in the Australian Army and wider ADF would suggest that this is all well and good; however, it will be a rare turn of events that leads to responsibility for an operational approach falling on an Australian Army Headquarters. Our focus, unless in the rare instance we are required to lead a regional intervention of choice, is almost always going to be tactical and operational design is therefore an unnecessary distraction. This argument is highlighted by a Canadian officer:

> It could be argued that middle-powers [such as Australia] are incapable of exercising operational art, and perhaps do not require an independent operational level at all. In this case, their small, tactically focused militaries would only require an understanding of operational doctrine to the extent that permits them to integrate tactical forces into larger alliance or coalition operations, and to effectively participate in coalition headquarters (HQ)—a requirement limited to a small number of senior commanders and staff officers.[24]

Besides, if the comments in 2008 from Land Headquarters regarding proposed amendments to the MAP are anything to go by, it would appear that the MAP is more than adequate for meeting Army's needs for any situation.[25]

Together, this sort of thinking highlights Michael Evans' central argument that ADF operational art is conceptually weak and has been characterised by an

intellectually restrictive framework, resulting in a 'closing of the Australian military mind'. Operational warfare is not a factor of size, but rather one of function. Without an operational framework, middle powers such as Australia are not capable of pursuing sovereign interests.[26] The reality is Australian Army battle groups deploying to Afghanistan are attempting to balance the tactical expectations placed on them by Regional Command South and the NATO International Security Assistance Force (ISAF) Headquarters with the strategic expectations placed on them by the ADF. Nobody is providing support to the battle group commander to develop an operational framework to manage these competing expectations. As one returned Afghanistan Reconstruction Task Force Commander acknowledged, '80% of my job was operational, 20% tactical; my sub-unit commanders were 20% operational and 80% tactical. Success demanded operational art. I was setting my own operational objectives to meet Australia's intent.'[27]

> Without an operational framework, middle powers such as Australia are not capable of pursuing sovereign interests.

COMPLEXITY, WICKED PROBLEMS AND SYSTEMS THINKING

> *[Complex systems'] most marked feature is a departure from the idea that our world can be reduced to simple models, that the real dynamics of the world make prediction nearly impossible and demand a different way of thinking.*[28]
>
> – Joshua Cooper Ramo

Today, rapid advances in technology, globalisation and the spread of information and communications technology have promoted greater interconnectivity and interdependence, resulting in modern forces being larger, more specialised, more networked, with decisions being more distributed than ever before.[29] Alongside this, although the nature of war has not changed since Thucydides wrote *The Peloponnesian Wars*, our aspirations for the use of military force to further political ends have. Rather than using military force to defeat an enemy military force in order to seize geographic or economic strategic objectives as in days past, today military forces are being used to attempt to solve all manner of vague and ill-defined 'strategic problems' that often do not have a neatly definable solution and more often than not require much more than just the application of military force and many more actors than just the military. Our enemy, too, are proving to be increasingly innovative, diverse, adaptive, agile and lethal, proving to be more difficult to defeat than anticipated. And, an increasingly pervasive media ensuring the accelerated

dissemination of any negative action as well as the interpenetration of politics throughout each of the levels of war add additional complexity to the operating environment. This entire melting pot of technology, increasing interdependence, ill-defined strategic problems, multiple actors, and an asymmetric enemy have together created an extremely complex environment that consistently defies prediction.

War has always been complex. Even a casual reading of Thucydides highlights that war is a social phenomenon that occurs within an intricate and interconnected web of politics, economics, societal dynamics, culture, religion, ideology, geography and the international relations between states. Clausewitz, too, understood fundamentally the inherent complexity in war which is evident in his emphasis on interaction, friction and chance. As Alan Beyerchen argues, *On War* 'is suffused with the understanding that every war is inherently a nonlinear phenomenon, the conduct of which changes its character in ways that cannot be analytically predicted'.[30] But there is now a widespread growing realisation that due to increasing complexity our traditional approaches to solving problems through the use of military force, grounded in Newtonian logic and linear determinism, do not work.[31] This growing realisation has come about through practical experience most recently in Iraq and Afghanistan and through an increased awareness of advances in the science of complex systems.

A system is complex in the sense that there are a great many independent agents interacting with each other in a great many ways.[32] Not only do these independent agents interact with each other, but they individually and collectively interact with their environment. Human society is a complex system, made up of many, many complex systems. The Army, too, is a complex system made up of many other complex systems. A key property of a complex system is it will tend towards non-linear behaviour. This means that changes in system output are not necessarily proportional to changes in system input as they would be for a linear system. Small causes of change do not necessarily result in small effects.[33] The so called 'strategic corporal' effect is an example, as is Clausewitz's assertion that success 'is not due simply to general causes. Particular factors can often be decisive—details only known to those who were on the spot … while issues can be decided by chances and incidents so minute as to figure in histories simply as anecdotes.'[34] Second, non-linear systems can not be broken into smaller pieces, analysed, and then put back together with the expectation that the sum of the analyses will satisfactorily explain the whole. This requires a holistic view of the system, not a reductionist view. As Huba Wass de Czege, the founder of SAMS and lead author of the famous US Army FM 3-0 *Operations* (AirLand Battle) suggests:

> Small causes of change do not necessarily result in small effects.

Where merely complicated systems require mostly deduction and analysis (formal logic of breaking into parts), complexity requires inductive and abductive reasoning for diagnostics and synthesis (the formal logic of making new wholes of parts).[35]

Unfortunately, the MAP is firmly grounded on deduction (IPB, Mission Analysis) and analysis (COA selection) rather than any explicit synthesis.

Two other properties of complex systems worth noting are emergence and adaptation. Emergence essentially describes the condition where the whole is different to the sum of its parts.[36] That is, emergence is 'the arising of novel and coherent structures, patterns, and properties during the process of self-organisation in complex systems'.[37] A simple example is that humans, attempting to satisfy their material needs by buying, selling and trading with one another create an emergent structure known as a market. According to complex systems science, the key to even beginning to understand emergence lies in the connections between the 'nodes' or parts of the systems, rather than just focusing on the nodes themselves.[38] The second property of note in complex systems, and one intimately connected to emergence, is adaptation. All living organisms on earth are complex adaptive systems. Such systems are self-organising because they have the capacity to 'learn' from their interaction with their environment; over time, there is a trend toward increasing sophistication, complexity and functionality.[39] According to the Nobel Laureate Murray Gell-Mann, a complex adaptive system:

> … receives a stream of data about itself and its surroundings. In that stream, it identifies particular regularities and compresses them into a concise 'schema', one of many possible ones … In the presence of further data from the stream, the schema can supply descriptions of certain aspects of the real world, predictions of events that are to happen in the real world, and prescriptions for behaviour of the complex adaptive system in the real world. In all these cases there are real world consequences … All these consequences then feed back to exert 'selection pressures' on the competition among various schemata, so that there is a strong tendency for more successful schemata to survive and less successful ones to disappear …[40]

In essence, complex adaptive systems are continually adapting to improve their fit to the environment based on their 'perceptions' of the environment. Army's Future Land Operational Concept, *Adaptive Campaigning*, recognises this when it describes warfare as a competitive learning environment between multiple complex adaptive systems, requiring emphasis on consistent context appropriate behaviour if these systems are to be changed in our favour.[41]

Complex human systems produce ill-structured, or 'wicked' problems. Wicked problems were first defined by two US city planners, Horst Rittel and Melvin Webber in the 1970s. Rittel and Weber were motivated by the understanding that the

professionalised cognitive and occupational styles that were refined in the first half of this century, based in Newtonian mechanistic physics, are not readily adapted to contemporary conceptions of interacting systems and to contemporary concerns with equity.[42]

There are ten distinguishing properties of wicked problems, but of most import for armed forces called upon to deal with wicked problems is the realisation that there is no definitive formulation of a wicked problem. This means that the information needed to understand the problem depends on one's idea for solving it: the problem cannot be defined until the solution has been found.[43] This in turn means that both the nature of the problem and the appropriate response are unique and fluid.[44] In the face of a wicked problem, defining the true nature of the problem becomes both essential and problematic. Often, the true nature of the problem does not emerge until we create change in the system, and even after change is created the true problem does not emerge until an indeterminable period of time has passed. How we frame the problem is therefore fundamental to success—we solve the problems we frame.[45]

Typically, though, there is a tendency to not even recognise the relevance of the complexity and 'wickedness' inherent in many of the problems we are called upon to solve and to leap straight into what we know and attempt to 'tame it'. As Gary Klein argues in his popular book, *Sources of Power*, decision-makers usually look for the first workable option they can find, not necessarily the best solution. The emphasis is more on being poised to act rather than being paralysed until all the evaluations have been completed.[46] Our own culture exacerbates this 'can-do' attitude, as does the MAP with its upfront analysis of the mission which is generally provided to us by our higher headquarters and accepted as the mission that needs a solution. In his excellent book *The Fifth Discipline*, Peter Senge points out that:

> ... decision-makers usually look for the first workable option they can find, not necessarily the best solution.

> [from] a very early age, we are taught to break apart problems, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our sense of connection to a larger whole.[47]

A striking example of an attempt to tame a wicked problem is offered by Keith Grint in an analysis of leadership, command and management during D-Day. Grint highlights the 1942 raid on Dieppe by the Canadians. He suggests the planners were so confident that they demanded that no Canadian unit commander use his initiative since this itself might undermine the guarantee of success. The Canadian

Commanding General of the raid, Major General J H Roberts, was quite optimistic about the whole affair, for 'the plan is good, the men are keen and they know what to do'. This just before landing 5100 troops only to see 3648 fail to return.[48]

Effective action in an environment where problems tend to be ill-structured and are the result of multiple complex adaptive systems competing with each other requires significant insight into the relationships defining the wider system.[49] A systems perspective acknowledges there are multiple levels of explanation in any complex situation and looks at the situation holistically, avoiding the temptation to break the perceived problem down into manageable chunks. A predilection of the military, however, is to focus on 'events'. This in turn leads to 'event' explanations—who did what to whom (incident reports for example). While such explanations may be true for the particular incident captured at a certain point in time and from a certain perspective—our own—they 'distract us from seeing the longer term patterns of change that lie behind the events and from understanding the causes of those patterns'.[50] Typically we ignore the deeper, more fundamental questions associated with the structure of the system or systems with which we interact. That is, we fail to ask and answer: 'What causes the patterns of behaviour?' Connected to this is the typical response when faced with a failing course of action of finding someone to blame or assigning responsibility to one individual to oversee 'the system', to coordinate and control what is happening. Ironically, the 'system' includes how we work together; putting somebody in charge by its very nature makes things worse because no one person can understand 'the system' and its multiple interactions well enough to be responsible.[51] A collaborative approach to problem solving that deliberately and with focus includes a variety of perspectives is essential.

> A predilection of the military, however, is to focus on 'events'.

THE LEARNING ORGANISATION

> *Learning organisations are … organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.*[52]
>
> – Peter Senge

The final stimuli behind the push for enhanced operational design is the realisation that, in order to prepare its leaders for the challenges and complexities of the contemporary operating environment, the US Army must develop an institutionalised culture of innovation and adaptation. In an influential article in 2004, then

Brigadier General David Fastabend and Robert Simpson passionately argue that 'if we were to choose one advantage over our adversaries it would certainly be this: *to be superior in the art of learning and adaptation*'.[53] Specifically, the US Army must become a true learning organisation.

According to Fastabend and Simpson, 'learning organisations routinely overcome the impediment of centralised responsibility by instilling within the organisation a thirst for creativity and a hunger for challenge'.[54] This requires significant cultural change because an organisation's culture is a 'persistent, patterned way of thinking about the central tasks of and human relationships within an organisation', and typically organisations favour policies that reinforce the essence of the organisation and provide a clear roadmap to success for its members.[55] According to John Nagl, the key to organisational learning is 'getting the decision-making authority to allow such innovation, monitor its effectiveness, and then transmit new doctrine with strict requirements that it be followed throughout the organisation'.[56]

History has proven that tactical competence does not necessarily translate into operational competence. Similarly, and also because complexity is multi-scale phenomenon, adaptation and innovation cannot be confined to just one of level of war. The culture of the learning organisation must transcend the levels of war: a true learning organisation will learn at the tactical, operational and strategic levels simultaneously (although not necessarily at an even pace across the three levels). The recognition within the US Army that this was not occurring in both Iraq and Afghanistan, that learning was not occurring quickly enough at the operational and strategic levels, has led to the conclusion that the traditional methods for determining an appropriate and relevant operational approach were somehow incomplete.

> … doing things right is not enough; we need to ensure we are also doing the right things.

The implications of these hard won 'lessons'—the need for a relevant and adaptive operational approach, the realisation that many of the problems that Army is called upon to solve are 'wicked' and occur within an increasingly complex environment, and that success in such a context demands a true multi-scale learning organisation—are significant, and directly influence the development of the methodology of operational design.

First, our traditional methods for problem solving are no longer as relevant because they tend toward the linear reduction of a problem that might not even be the right problem. But we solve it, or try to, anyway. Second, doing things right is not enough; we need to ensure we are also doing the right things. Problem definition is therefore key, and problem definition only comes through understanding the context of the situation through interaction and iteratively adjusting our behaviour

as appropriate. Third, this in turn depends on our ability to constantly challenge our own perceptions and understandings. We need to treat each of our mental pictures or frames of the environment and the situation as provisional. Next, we need to realise that the operational problems encountered today are too complex for one person to understand and overcome. Therefore, successful approaches to dealing with these complex problems depend on a collaborative approach based on deep and shared understanding incorporating a wide variety of views. This understanding is only likely to be generated through deliberate and focused discourse that generates creative tension and allows synthesis. Fifth, a systemic response is required: not just holistic understanding but also an operational approach for systemic transformation. Finally, a learning system that is inherently adaptive is required. All of these themes are captured in the current methodology for operational design.

> It is suprising it has taken this long for the Army to recognise the need for an explicit and codified methodology for design …

WHAT IS OPERATIONAL DESIGN?

> *… if considered seriously and used responsibly, design should be the crucial anvil on which the human environment, in all its detail, is shaped and constructed for the betterment and delight of all.*[57]
>
> – John Heskitt

It is suprising it has taken this long for the Army to recognise the need for an explicit and codified methodology for design in the context of military action because design features so fundamentally in all other parts of our lives. In *Design: A Very Short Introduction*, John Heskitt suggests:

> Design is one of the basic characteristics of what it is to be human, and an essential determinant of the quality of human life. It affects everyone in every detail of every aspect of what they do throughout each day. As such, it matters profoundly. Very few aspects of the material environment are incapable of improvement in some significant way by greater attention being paid to their design.[58]

Most other professions in life see design as fundamental to their existence. According to Bryan Lawson in *How Designers Think: The Design Process Demystified*, designers suggest how the world might be, unlike scientists who describe how the world is. Designers are therefore 'all "futureologists" to some extent. The very essence of their job is to create the future, or at least some features of it'.[59] Given the Army is

all about creating a future, usually in somebody else's land and usually against stiff opposition, it makes sense to clearly articulate and codify a methodology for doing so. Typically, good commanders have always intuitively developed designs that have allowed their staff to produce plans using the MAP to achieve their intent. But, there is danger in assuming that this will always be the case and, as we have seen, the complexity inherent in the operational environment today is so great that there is risk in depending on a single individual to understand the environment and then to come up with a comprehensive plan to change the environment. There is also the associated risk that comes from assuming the commander's staff will understand an implicit design. These risks multiply when problems cross boundaries and when coalition and host nation forces are involved.[60] So codifying the methodology of design provides significant benefit to a headquarters wrestling with complex operational problems. According to Wass de Czege, systematising collective critical and creative thinking in a headquarters through a collective design approach:

> … attains a broader, holistic, and shared understanding of the situation. It benefits from multiple perspectives introduced in a rigorous and disciplined way. The 'problem' is more likely to be a shared view within the headquarters, better defined, and more rigorously documented, making re-definition easier and faster. Planning to solve the problem is likely to proceed more effectively and more rapidly.[61]

Design in the military context is not, as is stated in ADDP 5-0 *Joint Planning* (Second Edition), 'the analytical and logical extension, which produces an operation plan. It is the science that supports the [operational] art [which is the creative process].'[62] Nor is it simply problem framing—conceptual, even abstract, hypothesising about underlying causes and dynamics that explain events in the contemporary operating environment—as the draft LWD 3-0 *Operations* defines it.[63] More comprehensively, design is defined as: an approach to critical and creative thinking that enables a commander to create understanding about a unique situation and to visualise and describe how to generate change.[64] Operational design is not simply about defining the problem or generating a

> The output of design is a planning directive or guidance from the commander that outlines the nature of the problem …

deeper understanding of the operating environment than Intelligence Preparation of the Battlefield; it is equally about proposing a framework within which actions can occur to create transformative systemic change in our favour, over a specified period of time, taking into account available resources. Design can occur as a prelude to planning; concurrent with planning, in the sense that design can inform

follow-on actions once an immediate crisis has been resolved; and may emerge while executing ongoing operations. It is iterative, which means it does not cease once a plan is developed, but establishes and then depends on feedback in order to regularly assess its relevancy and effectiveness in light of a continually changing environment. The output of design is a planning directive or guidance from the commander that outlines the nature of the problem as it is understood and the operational approach to resolve that problem. This enables greater shared understanding, stakeholder buy-in, and facilitates more comprehensive planning.

It is not in the scope of this article to detail at length the methodology of operational design, and Banach and Ryan's article 'The Art of Design: A Design Methodology' and the US Army's *Issue Paper: Army Design Doctrine* are recommended as primary sources. In short, however, the methodology for operational design that is currently being taught at SAMS and other US Army institutions focuses on three primary artefacts: an environmental frame, a problem frame and a design concept (an operational approach). These artefacts capture the shared understanding of the environment, the problem and its broad solution. The design takes place within three related cognitive spaces—the operational environment, the problem space and the solution. Because of the yin and yang relationship between problem and solution that is evident when dealing with complex and wicked problems, designers will not necessarily follow a prescribed sequence as you would when following the MAP, but rather tend to bounce in and out of the three cognitive spaces as new ideas are presented, new information is revealed, shared understanding increases and synthesis occurs. In essence, the environmental frame, the problem frame and the design solution relate to three fundamental questions: What is the context in which the design will be implemented? What problems should be addressed and what must be acted upon? How will the design resolve or manage the problem?[65]

In the environmental space designers focus on generating a systemic understanding of the environment, the existing conditions relative to desired conditions, and accounting for all of the actors (including, importantly, ourselves), their relationships and their tendencies, the patterns of conflict and cooperation, and the potential for change. The environmental frame sets a boundary for inquiry and aims to identify what is new or different in the emerging context that implies the current level of understanding is no longer sufficient to comprehend and explain the problem. Importantly, this includes a robust dialogue with higher headquarters in order to clarify objectives and higher guidance, and to refine collectively an understanding of what is required versus what is possible. Diving straight into Mission Analysis amounts to receiving higher guidance uncritically, in effect framing the problem in accordance with the higher headquarters in a way that potentially ignores relevant environmental contexts. In the problem space designers examine the tensions in the environment, both the existing tensions and potential tensions that may emerge as patterns of resistance,

opposition or support as we create change in the system. The problem frame articulates what the problem is by identifying what needs to change. In the solution space designers examine areas for intervention and exploitation, remaining cognisant of time and resource issues. The design concept or operational approach is the framework for changing existing conditions articulated in the environmental frame towards the desired conditions. Unlike current doctrine—ADDP 5-0 for example—it does not focus all actions on 'neutralising, weakening, defeating or destroying the enemy COG'.[66] Instead, the operational approach focuses on the desired environmental conditions; destroying an enemy COG may be just one of many actions required to create successful systemic change.

Design is command-led, collaborative and depends on robust discourse involving multiple perspectives (including inter-agency perspectives) to constantly challenge existing mental models of the environ-

> Design is command-led, collaborative and depends on robust discourse involving multiple perspectives …

ment, the problem and the solution. It is best done in small groups, with wider participation encouraged at various points in the design to broaden perspectives or continue momentum. In the Australian Army context, design is most likely to be a complementary action to planning conducted as a deliberate and focused activity by the commander (unit, formation or higher) and his plans staff. It does require time and is unlikely to be of use in a crisis where immediate action is required. To be most effective, designers should be well-versed in critical thinking techniques and have well-developed effective thinking skills. The quality of the result depends on the commander's willingness to entertain and consider challenges to his or her understanding and therefore depends on a climate of trust and acceptance.[67]

HOW DOES OPERATIONAL DESIGN PROMOTE ADAPTATION?

> *Nearly all missions this century will be complex, and the kind of thinking we have called 'operational art' is often now required at battalion level. Fundamentally, operational art requires balancing design and planning while remaining open to learning and adapting quickly.*

> – Huba Wass de Czege, 2009

By being explicitly iterative, operational design promotes continual learning. By explicitly focusing on systemic transformation through shared holistic under-standing, operational design promotes greater opportunities for organisational

learning. By including ourselves firmly within the environmental and problem frames and examining the potential changes and tensions we may create through our actions, operational design creates what Peter Senge calls a 'shift of mind—from seeing ourselves separate from the world to connected to the world, from seeing problems as caused by someone or something "out there" to seeing how our own actions create the problems we experience'.[68] And, most importantly, by explicitly acknowledging the requirement to reframe when changes in the operational environment render the operational approach no longer suitable or when we can no longer adequately explain actor behaviour in the operational environment, operational design enhances our ability to adapt beyond just tactics, techniques and procedures.

According to Banach and Ryan, reframing is the most important but most difficult part of design. Reframing is:

> … an intellectual activity to identify new opportunities and overcome obstacles to progress when interactions with the real world situation or new sources of information reveal issues with a current problem. Reframing shifts attention from trying to solve the current problem right to asking whether the right problem is being solved. It is a way for designers to pull back and reassess the operational environment, allowing them to challenge their situational understanding and review expectations of actor behaviour against the evidence.[69]

At the heart of operational design is the fundamental recognition that there will be inevitable changes to the environment resulting from our actions. These changes will be impossible to predict and many will be impossible to anticipate. Change is inevitable, and the likelihood of our operational approach changing is high. Reframing is an explicit action to shift perspectives and reset the problem in the face of changed circumstances and new knowledge. Setting reframing criteria as part of designing the operational approach is therefore essential, and the reframing criteria needs to account for successful actions on our part, not just unsuccessful ones.

Reframing is deliberate and purposeful action. To be effective reframing needs to be underpinned by sound critical thinking skills because it requires appreciating the values,

> Change is inevitable, and the likelihood of our operational approach changing is high.

perceptions and biases of ourselves, allies, adversaries and others, including those seemingly 'non-rational actors'. Critical thinking also assists in choosing between competing explanations of events, providing a holistic context, ensuring hypotheses within an existing frame are weighted in proportion to the evidence, and to assess

potential longer term consequences of our actions.[70] Challenging existing beliefs and perceptions is difficult and one of the strongest impediments to overcome in executing relevant adaptation.

A CAUTIONARY TALE?

Operational design demands a sceptical posture that continually challenges accepted beliefs and perceptions. It is important the same degree of healthy scepticism is applied to the methodology of operational design itself as it evolves, lest it go the way of Effects Based Operations (EBO), Systems of Systems Analysis (SoSA) and Systemic Operational Design (SOD) as the latest fad that will guarantee sure-fire success on an inherently uncertain battlefield. The Israeli Defence Force's (IDF) reliance on SOD (and EBO) as the doctrine for developing their operational approach and executing actions against Hezbollah in Lebanon in 2006 is instructive. SOD has formed the basis from which the current version of operational design has evolved.

According to Matt Mathews in his influential study *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*, Shimon Naveh's SOD, which had formed the core of recently disseminated new IDF doctrine, proved highly disruptive:

> The new language and methodology severely handicapped many commanders in the field. A large majority of IDF officers simply did not grasp the SOD-inspired doctrine. When the terminology made its way into at least one division's operation orders, the brigade commanders were at a complete loss to understand them.[71]

According to one former IDF operational planner, the new doctrine inflated the

> focus on the cognitive side of war and the media war. Instead of killing the bad guys like in the good old days, they wanted to create a 'consciousness of victory' on our side and 'cognitive perception of defeat' on the other side.[72]

The current evolution of operational design has moved beyond the abstract, obscure, post-structuralist language of SOD and is receiving positive feedback from both students and practitioners. Nevertheless, there is the danger of its utility becoming over-inflated and it becoming an end in itself. Equally, there is the possibility of overreacting and 'dumbing down' design to the extent that it becomes a new set of buzz words without a solid educational foundation. This too must be avoided and requires an investment in intellectual capital to ensure an appropriate methodology for operational design is codified.

CONCLUSION: IMPLICATIONS FOR THE AUSTRALIAN ARMY

… the real challenge is not to put a new idea into the military mind but to put the old one out.[73]

– Liddell Hart

First, the Australian Army must come to the realisation that its current doctrine and professional military education does not best prepare its leaders to operate in an increasingly lethal, diverse and complex environment. Solving complex operational problems requires a different approach to traditional, linear, reductive problem solving approaches, and our soldiers and their leaders need to become even more comfortable with operating in an ambiguous, uncertain and unpredictable environment. Doctrine needs to be revised for relevance in light of experience gained from recent operations by ourselves and especially our coalition allies, who are doing more fighting and dying than we are in a complex operating environment.

Specifically, intellectual capital needs to be invested into incorporating an appropriate operational design methodology into the MAP and LWD 3-0 *Operations* (Developing Doctrine). Army has been attempting to revise the MAP since 2005. This process has stalled due to an attempt to incorporate Army Risk Management throughout the publication. Now is the time to develop a design methodology that transcends all three levels of war and is relevant for the wider Australian Army and look to incorporate this methodology into the MAP in much the same way the USMC has before the MAP goes to print. Similarly, the current passage on design in LWD 3-0 *Operations* requires significant amendment which can occur in the near future before this publication goes to print. Doctrinal change then needs to be supported by a robust plan to ensure the revised doctrine is taught (Grade 2 and 3 Career Courses, Australian Command and Staff College for example) and used in the wider Army, including by deployed forces. It is hoped that this in turn could generate professional discussion on the merits or otherwise of design supporting complex problem solving.

By definition, design depends on critical thinking to support complex decision-making. The Army needs to re-evaluate its approach to educating critical thinking skills. Currently, short modules on critical thinking are offered at both the Royal Military College, Duntroon, and Australian Command and Staff College. However, instead of critical thinking being considered as a foundation skill, it tends to be dealt with as simply one of many modules to be covered in the curriculum. The modules offered tend to only introduce critical thinking, barely skim the wave tops and then, once completed, rarely if ever used again in a deliberate and focused manner. And it is rare for the staff to participate in these modules. Improving our critical thinking skills requires a deliberate and focused cultural change in the Army,

in a manner similar to the cultural change called for by Fastabend and Simpson for the US Army.

Finally, the right command and leadership culture is fundamental if we are going to be successful in solving complex operational problems. Establishing a 'design team' where the commander is a central but not dominating figure, where group think is avoided and where robust, rigorous discourse is permitted to take place will be a challenge for the Army. It is noteworthy that although the overwhelming majority of participants at the Chief of Army's Conference of 2006 agreed the culture of mission command required deliberate and focused fostering and encouragement, very little substantive action has been taken to date to facilitate this.[74] Yet, a mission command culture, one that relies on implicit trust between superior and subordinate, and one that promotes learning from mistakes and trial and error is exactly the type of command climate required to best leverage design.

ENDNOTES

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5   Stefan J Banach, 'Educating by Design: Preparing Leaders for a Complex World', *Military Review*, Vol. 89, No. 2, March–April 2009, pp. 96–104; and Stefan J Banach and Alex Ryan, 'The Art of Design: A Design Methodology', *Military Review*, Vol. 89, No. 2, March–April 2009, pp. 105–15.

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16   Richard Clutterbuck, *The Long, Long War: The Emergency in Malaya 1948–1960*, Cassell, London, 1966, p. 51.

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19   Colin S Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy*, Praeger Security International, Westport, 2007, p. 50.

20   Evans, 'The Closing of the Australian Military Mind', p. 110.

21   See Tom Ricks, *Fiasco* on 'How to Create an Insurgency', pp. 149–202; and Tom Ricks, *The Gamble: General David Petraeus and the American Military Adventure in Iraq, 2006–2008*, The Penguin Press, New York, 2009 for the discussion on Casey's operational approach.

22   Ricks, *The Gamble*. Bob Woodward arrives at similar conclusions to Ricks; however, he arrives at his conclusions from a different perspective. See Bob Woodward, *The War Within: A Secret White House History, 2006–2008*, Simon and Schuster, New York, 2008.

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by trial-and-error, every attempt counts significantly; wicked problems do not have an enumerable (or exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan; every wicked problem is essentially unique; every wicked problem can be considered to be a symptom of another problem; the existence of a discrepancy representing a wicked problem can be explained in numerous ways and the choice of explanation determines the nature of the problem; and, the planner has no right to be wrong. Ibid., pp.161–67.

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LEARNING TO LEVERAGE NEW MEDIA

THE ISRAELI DEFENCE FORCES IN RECENT CONFLICTS[*]

LIEUTENANT GENERAL WILLIAM B CALDWELL IV, US ARMY;
MR DENNIS M MURPHY; AND MR ANTON MENNING

The contemporary media environment continues to change at an ever-accelerating pace, faster than most could have imagined just 10 years ago. This acceleration has significant implications for today's media outlets and the military. New media is a case in point. It has been described as a 'combustible mix of 24/7 cable news, call-in radio and television programs, Internet bloggers and online websites, cell phones and iPods'.[1] New media's meteoric rise and increasing pervasiveness dictate fresh terms for the culture of media engagement.

With easy access, enormous reach, and breadth, this upstart has flexed sufficient muscle during recent conflicts to alter or transform our traditional view of information and its impact on populations and military operations. Simple to use, new media leapfrogs ordinary rules and conventions. At the same time, its very user-friendliness encourages unconventional adversaries to manipulate a

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growing number of related technologies to generate favorable publicity and recruit supporters. For these reasons and more, civilian and military leaders can ill-afford to ignore it. Perhaps more importantly, they must not fail to understand and use the new form of information dissemination, as it possesses serious implications for military operations.

Focusing on the current litany of new media capabilities can inhibit understanding because present developments may fail to account for anticipated technological advances. A more enduring description of new media would recognize its embrace of any emergent technological capability. Such emergent capabilities can empower a broad range of actors—individuals through nation-states—to create and spread timely information that can unify a vast audience via global standardized communications (e.g., the salience of the Internet). Impact and urgency assume such a sufficiently high profile that the currently 'new' media might better be referred to as the 'now' media. At the same time, there is an overarching dynamism that springs from the exponential increases in capability that seem to occur weekly.[2] Indeed, a key enabler for new media is 'digital multi-modality': content produced in one form can be easily and rapidly edited and repackaged, then transmitted in real time across many different forms of media.

> … 'new' media might better be referred to as the 'now' media.

The potential for engagement is staggering—with the ability of new media to mimic comparable—albeit much slower—developments in the television industry. Thirty years ago, cable television was in its infancy, with three networks ruling the airwaves. Today, cable channels offer multitudes of options, and scores of satellite channels vie for viewers, fragmenting the broadcast audience. Similarly, over the last decade, the rise of the Internet and easy-to-use technology has fueled an explosion of the blogosphere. By August 2008, some 184 million blogs had proliferated worldwide, according to a *Technorati* report.[3] Three of the top five most visited sites in the United States were social networking or video sharing sites, including Facebook, MySpace, and YouTube.[4] According to The State of the News Media 2009 report from the Pew Project for Excellence in Journalism, the 50 most popular news sites registered a 27 percent increase in traffic over 2008.[5]

Proliferation and accessibility have played havoc with old rules of the media game in at least two important areas, gatekeeping and agenda-setting. Before the widespread advent of the new media, traditional editors and producers served as 'gatekeepers', determining what stories and features to publish in accordance with varied criteria. In effect, key individuals and organizations controlled access to information.[6] Their decisions consciously or unconsciously set the agenda for

coverage of news stories. Some issues received attention over others, and the media told the public not what to think but what to think about. Selection processes enabled media custodians to frame issues of importance for public consciousness. According to a 1977 pioneering study by Max McCombs and Donald Shaw, 'complex social processes determine not only how to report but, even more important, what to report'.[7] The conclusion was that gatekeeping and agenda-setting went hand-in-hand. However, this dynamic is changing.

Arguably, for the first time in history, new media has abolished traditional gatekeeper and agenda-setting roles. With the invention of Blogger in 1999, Pyra Labs created an easy-to-use method for anyone to publish his or her own thoughts in blog form. Google's purchase of Blogger in 2003 helped ignite a blogging explosion. Since that time, blogs have demonstrated the ability to thrust issues from obscurity into the national spotlight, while demonstrating the ability to become agenda-setters for the 21st century.[8] In similar fashion, new media has also seized an important role in gate-keeping. YouTube, for example, has become its own gatekeeper by deciding which videos to host on its site and which to erase.

During conflict, the same dynamism plays havoc with traditional notions of the media's role in informing, shaping, and swaying public opinion. In 2003, Frank Webster argued in *War and the Media* that 'the public are no longer mobilized to fight wars as combatants, they are mobilized as spectators—and the character of this mobilization is of the utmost consequence'.[9] Although military historians might argue that this process is at least as old as the nation-state, new media has injected an equation-altering sense of scale and speed into the traditional calculus. In 2006, Howard Tumbler joined Webster in *Journalists Under Fire* to identify a 'new' type of conflict the two commentators termed 'Information War'.[10] Like many other contemporary observers, they concluded that the familiar industrial model of warfare was giving way to an informational model. The struggle for public opinion retained central importance, but the sheer pervasiveness and responsiveness of new media recast the terms and content of the struggle. There were at least two clear implications. The first was that 'the military has a commensurately more complex task in winning the information war'.[11] The second was that there remains little choice but to engage new media as part of the larger media explosion. Failure to do so would leave a vacuum—the adversary's version of reality would become the dominant perception.

> Arguably, for the first time in history, new media has abolished traditional gatekeeper and agenda-setting roles.

Even a brief survey of new media's nature and impact leaves military leaders with some powerful points worthy of consideration by senior civilian leaders:

- New media has the capacity to be nearly ubiquitous. With only a few notable exceptions (e.g., Chechnya and Western China), there is little escape from its span and grip.
- Like the old media, new media can also be enlisted to serve specific masters, though perhaps with greater difficulty.
- Properly understood, new media can be a source of great power and influence.
- New media holds a tremendous upside for education and for broadcasting the military's message.
- New media forces us to modify habits and to think consciously about the practical and constitutional obligations inherent in becoming our own version of gatekeepers and agenda-setters.
- New media is affecting modern conflict in significant ways not yet fully understood.
- Whatever the full implications might be, the military must embrace the new media; there is really no choice. Its power and dynamism dictate that military estimates accord it the attention and focus it deserves.

As the new media story continues to unfold, combat experience produces a stream of implications for theory and practice in pursuing doctrinal development. Two case studies recount the role of new media in recent conflicts waged by Israel.

There are marked differences in the way the Israeli Defense Forces handled the media in the Hezbollah conflict during the summer of 2006 and in the Gaza incursion at the end of 2008 and beginning of 2009. The two instances suggest 'best practices' that the US military could adopt when dealing with new media and its role on the battlefield. A discussion of each follows.

> Whatever the full implications might be, the military must embrace the new media …

THE SECOND LEBANON WAR: INFORMATION AS A WARFIGHTING FUNCTION?

On 12 July 2006, Hezbollah kidnapped two Israeli soldiers just inside Israel across the Lebanese border. After a botched rescue attempt in which eight Israeli Defense Force (IDF) soldiers were killed, Israel launched a massive air campaign, targeting both Hezbollah and much of Lebanon. There ensued an Israeli ground invasion of southern Lebanon and a kinetic fight that the Israelis subsequently dubbed the 'Second Lebanon War'.[12] Although various militaries have sifted the resulting combat

experience for lessons learned, little attention has been devoted to Hezbollah's exploitation of information as a kind of 'warfighting function', with new media as the weapon of choice.[13]

Hezbollah has characteristics that, in the view of some observers, make the organization a paradigm for future US adversaries.[14] Hezbollah is neither a regular armed force nor a guerilla force in the traditional sense. It is a hybrid—something in between. As a political entity with a military wing, Hezbollah plays an important role in providing services to broad segments of the Lebanese population.[15] During the summer of 2006, the military wing demonstrated an impressive warfighting capability with an important information dimension: its fighters expertly leveraged new media capabilities while defending against their employment by the Israelis and while maintaining excellent operations security.

The conflict itself revealed many of the characteristics to which Webster and Tumbler had earlier referred. In a Harvard study on the media aspects of the 2006 war, the veteran journalist Marvin Kalb noted:

> To do their jobs, journalists employed both the camera and the computer, and, with the help of portable satellite dishes and video phones 'streamed' or broadcast their reports…, as they covered the movement of troops and the rocketing of villages—often, (unintentionally, one assumes) revealing sensitive information to the enemy. Once upon a time, such information was the stuff of military intelligence acquired with considerable effort and risk; now it has become the stuff of everyday journalism. The camera and the computer have become weapons of war.[16]

Kalb's observations emphasized a new transparency for war and military operations inherent in the ubiquity and power of new media. New technology and techniques—including digital photography, videos, cellular networks, and the Internet—were used by all parties: the press, Israeli and Lebanese civilians, the Israeli Defense Forces, and Hezbollah. The ease and speed of data transmission, coupled with the manipulation of images, affected the way participants and spectators viewed the war. Israeli soldiers sent cell phone text messages home, both sides actively used videos of the fighting, and civilians posted still and video imagery on blogs and websites, most notably YouTube.[17]

> Kalb's observations emphasized a new transparency for war and military operations …

Still, Hezbollah emerged as the master of the new media message. Playing David to Israel's Goliath, Hezbollah manipulated and controlled information within the operational environment to its advantage, using (at times staged and altered) photographs and videos to garner regional and worldwide support.[18]

Additionally, Hezbollah maintained absolute control over where journalists went and what they saw, thus framing the story on Hezbollah's terms and affecting agendas for the international media.[19] The widely reported use of Katushya rockets against Israel became both a tactical kinetic weapon and a strategic psychological one. But less is written about the fact that Hezbollah employed near-real-time Internet press accounts as open-source intelligence to determine where the rockets landed. Post-conflict reporting indicates that non-affiliated organizations used Google Earth to plot the location of the rocket attacks.[20] While there is no firm evidence that Hezbollah used this capability to attain greater accuracy of fire, the fact remains that this new media capability could have been used to increase accuracy and multiply the strategic information effect.[21]

> Hezbollah emerged as the master of the new media message.

Meanwhile, Hezbollah used its own satellite television station, Al Manar, to extend its information reach to some 200 million viewers within the region.[22] As a direct link between Hezbollah's military activities and these viewers, Al Manar timed coverage of spectacular tactical actions for maximum strategic effect.[23] For example, within minutes of the Israeli naval destroyer *Hanit* being hit by missiles, Hezbollah's secretary general, Hassan Nasrallah, called in 'live' to Al Manar to announce the strike, and Al Manar obligingly provided footage of the missile launch for distribution by other regional media and subsequently by YouTube.[24] It took Israel 24 hours to respond with its own account of the incident.

The use of information as a strategic weapon did not end with the kinetic fight. Hezbollah continued to use self-justifying and self-congratulatory information to affect perceptions of blame, responsibility, and victory. Hezbollah leaders even went so far as to place billboards on the rubble of buildings in southern Lebanon that said 'Made in the USA' (in English) immediately following the cease fire.[25]

Interestingly and importantly, Nasrallah did not appear to expect the full onslaught that characterized the Israeli response to the Second Lebanon War's triggering events.[26] Nevertheless, the way Hezbollah extensively enlisted information as a weapon of choice implies that this penchant is second-nature. That is, the emphasis on information is embedded in planning at all levels and inculcated in the culture of the military arm of Hezbollah. In strategic perspective, Hezbollah used information to reduce Israel's strategic options (and therefore its depth) in terms of time. An important focus was on proportionality, with Hezbollah exploiting the new media for information effects. Thus, Hezbollah portrayed Israeli Defense Forces military operations as a disproportionate use of force against the Lebanese civilian population, especially in light of the initial kidnapping incident that had spurred

Israel to action. Not surprisingly, only 33 days after the onset of hostilities, a ceasefire was declared. And, again not surprisingly, after a David-and-Goliath struggle in which winning meant not losing, Hezbollah unilaterally declared victory.[27]

All this is not to say that Israel neglected various forms of information, including the new media, to support its war aims, but Tel Aviv's focus was on the traditional use of information in support of psychological operations against the enemy. Leaflets were dropped, Al Manar broadcasts were jammed, and cell phone text messages were pushed to Hezbollah combatants and Lebanese noncombatants. These activities amounted to traditional attempts at turning the public against the adversary and instilling fear in the adversary himself. However, attempts at all levels to garner popular support from broader audiences through trust and sympathy were lacking.

In contrast, Hezbollah information efforts focused directly on gaining trust and sympathy for its cause at all levels. Israel provided no countervailing view, allowing Hezbollah to drive perceptions that could become universally accepted as truth. Consequently, as Dr. Pierre Pahlavi of the Canadian Forces College notes, 'the Jewish state forfeited the psychological upper hand on all fronts: domestic, regional, and international'. Thus, Hezbollah was able to create a 'perception of failure' for the Israelis, with consequences more important than the actual kinetic outcome.[28]

> These activities amounted to traditional attempts at turning the public against the adversary and instilling fear in the adversary himself.

The Hezbollah experience presents lessons for potential adversaries of the United States. At the same time, the United States and its military must consider whether the strategy and tactics of Hezbollah might represent those of the next adversary and prepare accordingly. Meanwhile, Israel, only two and a half years after the events in Lebanon, appears to have taken the experience to heart in conducting recent operations against Hamas in Gaza.

OPERATION CAST LEAD

During lunchtime on 27 December 2008, Israel unleashed a furious air attack that in mere minutes struck 50 targets in the Hamas-controlled Gaza Strip. The daylight raid took Gazans by surprise and marked the beginning of a 24-day offensive designed to stop Gaza-based missiles from raining down on southern Israel. A fragile ceasefire between Hamas and Israel had ended just eight days earlier. Israel, determined to avoid mistakes from the 'Second Lebanon War', embarked on a massive public

relations campaign that employed new media extensively. In fact, one newspaper featured the headline: 'On the front line of Gaza's war 2.0'.[29] A war in cyberspace unfolded simultaneously with ground and air operations, and both sides employed various web 2.0 applications—including blogs, YouTube, and Facebook—to tell their differing versions of events.[30]

To learn from the Second Lebanon War, the Israelis created a special study group, the 'Winograd Commission'. The recommendation that followed was to organize an information and propaganda unit to coordinate public relations across a wide spectrum of activities, including traditional media, new media, and diplomacy.[31] The function of the resulting body, the National Information Directorate, was to deal with *hasbara*, or 'explanation'. One news source held that, 'The hasbara directive also liaises over core messages with bodies such as friendship leagues, Jewish communities, bloggers and backers using online networks.'[32] According to a press release from the Israeli Prime Minister's office,

> The information directorate will not replace the activity of any Government information body. Its role will be to direct and coordinate in the information sphere so that the relevant bodies present a unified, clear, and consistent message and so that the various government spokespersons speak with a single voice. The directorate will initiate information campaigns and programs, host events, etc.[33]

With the National Information Directorate providing unity of message from the Prime Minister's office, the Israeli version of a strategic communication machine was ready to engage multiple media channels to win the war of ideas.

Two days after the airstrikes commenced, the Israeli Defense Forces launched its own YouTube channel, the 'IDF Spokesperson's Unit'. Within days, the channel became a sensation around the world. During early January 2009, the channel became the second most subscribed channel and ninth most watched worldwide, garnering more than two million channel views. The 46 videos posted to the channel have attracted more than 6.5 million views.[34] The videos depicted precision airstrikes on Hamas rocket-launching facilities, humanitarian assistance, video logs ('vlogs')
by IDF spokespeople, and Israeli tanks moving into position to attack. Hamas, not to be outdone, joined in the cyber-fracas with its own YouTube channels.

What was Israel's strategy for the use of new media during the Gaza incursion? The answer to this question lies partly in a study of contrasts. During the 2006 Lebanon War, Israeli Prime Minister Ehud Olmert said: 'My government is determined to continue doing

> … the Israeli version of a strategic communication machine was ready to engage multiple media channels to win the war of ideas.

whatever is necessary in order to achieve our goals. Nothing will deter us, whatever far-reaching ramifications regarding our relations on the northern border and in the region there may be.'[35] He had also spoken about 'destroying' Hezbollah.

In contrast, during the Gaza incursion, the Israeli leadership was far less definitive in its aims. It refused to place a timeline on operations and made no statements about completely neutralizing Hamas. Emanuel Sakal, former head of Israeli Defense ground forces, said, 'Nobody declared that there will never be any rockets anymore, and nobody said that in five, six, or seven days we will destroy Hamas. They have learned a lot from Lebanon in 2006.'[36] As in 2006, Israel knew it was fighting a war not just against Hamas, but against time. In virtually every conflict since 1948, the United Nations has passed resolutions to stop various Arab-Israeli conflicts. This military action was no exception. On 8 January 2009, UN Security Council Resolution 1860 called for an immediate cease fire in Gaza.[37] In addition, Israel had less than a month to complete operations in order to confront a new US presidential administration with a *fait accompli*. Therefore, Israel used all the informational tools it possessed to buy time. The longer the incursion might be framed in a positive or neutral light, the longer the IDF could continue its actions without undue concern for world opinion. In contrast with 2006, the Israelis would use the media to provide the strategic depth their country lacks. In fact, Israeli Foreign Minister Tzipi Livni admitted as much in an email: 'Intensive diplomatic activity in recent days is aimed at deflecting the pressure for a cease-fire to allow enough time for the operation to achieve its goals.'[38]

Many of the YouTube channels supporting Hamas are no longer viewable. They appear to have fallen casualty to an information war in which both Palestinians and Israelis mobilized fellow countrymen to engage in a cyber battle for control of the social media sphere. Because new media abrogates the traditional gatekeeper's role, those who generate content in new media are their own gatekeepers. As information is added to new media, the process itself snowballs to become an agenda-setter. Both the Israelis and Palestinians understood this dynamic; therefore, both parties sought to control new media through coordinated efforts at creating supportive online communities that might act as force multipliers in cyberspace. *The Christian Science Monitor* reports—

> The online war over Gaza was relentless. Hackers on both sides worked to deface websites with one attack successfully redirecting traffic from several high-profile Israeli websites to a page featuring anti-Israel messages. Facebook groups supporting the opposing sides were quickly created and soon had hundreds of thousands of members.[39]

Israel used all the informational tools it possessed to buy time.

The Jewish Internet Defense Force rallied to the cause. On its web site, the defense force has guides to Facebook, YouTube, Wikipedia, Blogger, and WordPress.[40] This organization boasts that it has helped shut down dozens of extremist YouTube sites.[41] The Palestinians have retaliated by posting pro-Palestinian and pro-Hamas videos on Palutube.com, a site that is generally supportive of Hamas and its military wing, Al-Qassam. *The Jerusalem Post* even ran an article that described the exact steps necessary to safeguard web sites from hacker attacks.[42]

In the midst of the electronic war for public opinion, traditional media were denied access to the battlefield. The Israeli Defense Forces began limiting access to the potential battlefield several months before combat operations actually commenced in an effort to control the flow of information.[43] The Israelis also sought to limit the images of civilian casualties that had so eroded support during the war with Hezbollah in 2006. However, this strategy may have backfired. Without an independent foreign media presence, Hamas' claims of atrocities against civilians and exorbitant death tolls went unchallenged. Jonathan Finer pointed out the gaffe in a *Los Angeles Times* article:

> In the midst of the electronic war for public opinion, traditional media were denied access to the battlefield.

No doubt the Israeli government is worried about sympathies generated by stories of Palestinian suffering. But it cannot be enjoying media coverage from Gaza dominated by a context-free stream of images of the wounded, disseminated by people with unknown agendas. Claims from Palestinian officials of more than 900 people killed and a humanitarian crisis underway have been left to stand unverified, as have Israeli reports that Hamas militants are deliberately drawing fire to hospitals and schools.[44]

Even as Israel generated its own content on YouTube and Twitter, and even as Israel catered to influential bloggers, Gazans sent out tweets, updated blogs, and used cell phones to transmit photos of carnage to the outside world. *Al Jazeera* reporters, who were stationed in Gaza prior to the restrictions levied on entering journalists, provided riveting accounts of the war to the Arab world.

Despite reports that the National Information Directorate began planning the information element of Operation Cast Lead nearly six months prior to execution, IDF spokesperson Major Avital Leibovich admitted that the YouTube channel was the 'brainchild of a couple of soldiers'.[45] *Wired* blogger Noah Schachtman likewise reports that 'the online piece was no strategy either. I met the kid who ran Israel's YouTube site…He thought it'd be kinda cool to share some videos online. So up went the site.'[46] Schachtman goes on to assert that Israel's new media strategy

collapsed as soon as mass casualty stories began to emerge from Gaza. However, Israel had bought the time it needed to conclude the operation.

LOOKING FORWARD AS THE MEDIA-SCAPE CONTINUES TO FRAGMENT

Israel's experiences as gleaned from these two recent military actions illustrate the complex manner in which traditional and new media interact on the battlefield. In a 2006 *Military Review* article, Donald Shaw termed traditional media as 'vertical' and alternate media (including new media) as 'horizontal'. Vertical media does indeed have a top-down agenda-setting power. However, 'vertical media's reach has declined while that of the alternative media—horizontal media that primarily interpret details—has increased'.[47] The upshot is that the military is forced to understand the complex interaction between traditional and new media, while appreciating the limits of each.

By limiting the access of international media to the battlefield during Operation Cast Lead, the Israelis ensured no voice would refute Palestinian claims of atrocities and civilian targeting. Conversely, in 2006 the presence of outside media contributed to possible tactical and operational successes by Hezbollah. This observation gains more significance when one considers media reports in combination with the capabilities of Google Earth and other spatial applications.

As the media environment continues to fragment in the future, engaging ever-diversifying platforms and channels will become more difficult for the military. But, as General Creighton Abrams reputedly once said, 'If you don't blow your own horn, someone will turn it into a funnel.' Under conditions of the current new media blitz, his possibly apocryphal words might be paraphrased to say, 'If you don't engage, someone else will fill the void.' Surrendering the information environment to the adversary is not a practical option. Therefore, the military must seriously consider where information and the new media lie in relationship to conventional warfighting functions. One thing seems sure: we must elevate information in doctrinal importance, and adequately fund and staff organizations dealing with information.

The 'era of persistent conflict' that characterizes today's operational environment is likely to endure for the foreseeable future, 'with threats and opportunities ranging from regular and irregular wars in remote lands, to relief and reconstruction in crisis zones to sustained engagement in the global commons'.[48] We must prepare thoroughly for the roles that new and traditional media are so certain to play in a less-than-stable future. Only by fostering a culture of engagement where the military proactively tells its own story in an open, transparent manner can we successfully navigate the many challenges of the media environment now and in the future.

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TACTICAL GENERALS

LEADERS, TECHNOLOGY, AND THE PERILS OF BATTLEFIELD MICROMANAGEMENT*

DR P W SINGER

ABSTRACT

In 1999 General Charles Krulak coined the term 'strategic corporal' (i.e., a junior member trained and empowered to make time-critical decisions in response to the dynamic ground fight). In this article, the author examines a similar phenomenon occurring among senior officers, observing that modern technology allows generals to personally engage on the tactical level from remote locations. How the military manages this phenomenon will become a core leadership question in the years ahead.

The four-star general proudly recounts how he spent 'two hours watching footage' beamed to his headquarters. Sitting behind a live video feed from a Predator unmanned aircraft system (UAS), he saw two insurgent leaders sneak into a compound of houses. He waited as other insurgents entered and exited the compound, openly carrying weapons. Now, he was certain. The compound was a legitimate target, and any civilians in the houses had to know that it was being used for war, what with all the armed men moving about. Having personally checked the situation, he gave the order to strike. But his role in the operation didn't end there; the general proudly tells how he even decided what size bomb his pilots should drop on the compound.[1]

THE RISE OF THE TACTICAL GENERAL

In *The Face of Battle*, his masterful history of men at war, John Keegan writes how 'the personal bond between leader and follower lies at the root of all explanations of what does and does not happen in battle'.[2] In Keegan's view, the exemplar of this relationship was Henry V, who inspired his 'band of brothers' by fighting in their midst during the Battle of Agincourt.

With the rise of each new generation of communications technology, these connections between soldiers in the field and those who give them orders grew distanced. Generals no longer needed to be on the front lines with their men but operated from command posts that moved further to the rear with each new technological advance. Yet, the very same technologies also pushed a trend 'towards centralization of command, and thus towards micromanagement'.[3]

For instance, when telegraphs were introduced during the Crimean War (1853–56), generals sipping tea back in England quickly figured out that they could send daily plans to the front lines in Russia. So they did. With the radio, this went even further. Adolf Hitler was notorious for issuing highly detailed orders to individual units fighting on the Eastern Front, cutting out the German army's entire command staff from leading its troops in war. Even the US military has suffered from this problem. During the rescue attempt of the American cargo ship *Mayaguez* in 1975, the commander on the scene received so much advice and orders from leaders back in Washington that he eventually 'just turned the radios off'.[4]

These leaders of the past, though, never had access to systems like today's Global Command and Control System (GCCS). As one report describes, 'GCCS—known as

> The growth in America's use of robotic systems has taken place so fast that many people seem not to realize how big it has gotten.

"Geeks" to soldiers in the field—is the military's HAL 9000. It's an umbrella system that tracks every friendly tank, plane, ship, and soldier in the world in real time, plotting their positions as they move on a digital map. It can also show enemy locations gleaned from intelligence.'[5]

This tracking system is reinforced by video feeds from various unmanned systems blanketing the battlefield. The growth in America's use of robotic systems has taken place so fast that many people seem not to realize how big it has gotten. US forces initially went into Iraq with only a handful of unmanned systems in the inventory; indeed, just one UAS supported all of V Corps. By the end of 2008, however, there were 5,331 UASs in the total US inventory.[6] In Iraq, some 700 drones supported that same V Corps just a few years later, while the sum total of Army and Air Force UASs was logging almost 600,000 annual flight hours.[7]

Rapid growth in ground robotics has occurred as well. Zero unmanned ground vehicles took part in the 2003 invasion of Iraq; a year later, 150 were in use. By 2008 the inventory in Iraq had approached the 12,000 mark, with the first generation of armed ground robots arriving that same year.[8] And the technological development is moving so fast that all of these systems are outdated the very moment they hit the marketplace and battlespace. These are just the Model T Fords and Wright Flyers compared to what is already in the prototype stage.

With these trends in play, warfare is undergoing a shift that may well parallel that which occurred in World War I. Amazing new technologies, almost science-fiction-like in their capabilities, are being introduced. (Indeed, the number of unmanned ground systems now in Iraq roughly parallels the number of tanks used in 1918.) Yet, as in World War I and the ensuing interwar years, the new technologies are not 'lifting the fog of war' or ending friction, as some of the acolytes of network-centric warfare would have it. Rather, in everything from doctrine to the laws of war, they are presenting more questions than we can answer.

Issues of command leadership offer just one example of the ripple effect now under way. The combination of networked connections and unmanned systems enables modern commanders as never before, linking them closer to the battlefield from greater distances and changing the separation of space. But the separation of time has changed as well. Commanders can transmit orders in real time to the lowest-level troops or systems in the field, and they have simultaneous real-time visibility into it. Previously, generals may have been distanced, but they could never 'see' what soldiers saw in the crosshairs of their rifle sights—or do anything about it. With a robotic system such as a Predator UAS or Special Weapons Observation Reconnaissance Detection System (a ground robot, the size of a lawn mower, armed with a machine gun), commanders can see the same footage that the operator sees, at the same time, and even take over the decision to shoot or not.

Many people, especially the network-centric acolytes who surrounded former secretary of defense Donald Rumsfeld, thought this linking together of every soldier and system into a vast information-technology network would decentralize operations, enable greater initiative among the lower-level units in war, and allow frictionless operations that lifted the fog of war.[9] So far, actual experience with unmanned systems is proving to be the opposite. New technologies have certainly enabled a powerful revolution to occur in our capabilities, creating a strange new world where science fiction is fast becoming battlefield reality. But although commanders are empowered as never before, the new technologies have also enabled the old trends of command interference, even taking them to new extremes of micromanagement. Too frequently, generals at a distance use technology to insert themselves into matters formerly handled by those on the scene and at ranks several layers of command below them. "'It's like crack [cocaine] for generals," says Chuck Kamps, a professor of joint warfare at the Air Command and Staff College. "It gives them an unprecedented ability to meddle in mission commanders' jobs.'"[10]

> Too frequently, generals at a distance use technology to insert themselves into matters formerly handled by those on the scene …

Over the last few years, many analysts have discussed what Marine Corps general Charles Krulak described as the rise of the 'strategic corporal'—how technology has put far more destructive power (and thus influence over strategic outcomes) into the hands of younger, more junior troops. A 20-year-old corporal can now call in air strikes directed by a 40-year-old colonel in the past. But these new technologies have quietly produced its inverse, what I call the 'tactical general'. Technology may have helped move senior leaders off the actual battlefield, but now it allows them to become more involved in the real-time fighting of war. What to do about this phenomenon will pose a core leadership question in the years ahead.

TO INTERVENE OR NOT TO INTERVENE

The four-star general who told how he spent two hours watching Predator footage recounted the story proudly and unprompted. He did so while trying to make a point about how he intended to assume personal leadership of operations for which he was responsible.

That a general, who can now see what is unfolding on the ground, would want to shape it directly makes perfect sense. Who better knows 'commander's intent' than the commander himself? All sorts of battles have been lost when subordinates in

the field misinterpreted or wrongly implemented a general's commands. A general who stays on top of an ongoing situation can also rapidly adjust to any changes that happen in the midst of battle, rather than proceed with old plans that have been overcome by events.

Unfortunately, the line between timely supervision and micromanagement is a fine one and may be quickly fading with unmanned systems. More and more frequently, generals insert themselves into situations inappropriately, and their command leadership role becomes command interference.

Examples run rampant. One battalion commander in Iraq told how he had 12 stars' worth of generals (a four-star general, two three-star lieutenant generals, and a two-star major general) tell him where to position his units during a battle. A captain in special operations forces recounted how a brigadier general (four layers of command up) had radioed him while his team was hunting down an Iraqi insurgent who had escaped during a raid. Watching live Predator video back at the command center in Baghdad, the general had orders for the captain on where to deploy not only his unit but also his individual soldiers![11] Another interviewee described how officers hundreds of miles away would tell him which roads his vehicle should take during raids in Afghanistan.[12]

As retired Air Force lieutenant colonel Dan Kuehl points out, the fact that a general now can use a '5,000-mile-long screwdriver' doesn't mean he should.[13] Besides the frustrations that such micromanagement brings subordinates, there is also the question of the appropriate division of labor in command. To the general who described spending two hours watching Predator footage, this was time well spent. As the ultimate commander, he would be held accountable if the strike went awry and collateral damage ensued. So, if the technology allowed, he believed that he should make sure the operation went exactly the way he wanted.

> Besides the frustrations that such micromanagement brings subordinates, there is also the question of the appropriate division of labor in command.

But this comes at a cost. While this general was doing a job normally entrusted to junior officers, who was doing his job? New technologies allow him and other senior flags to make tactical decisions as never before. But the captains, majors, colonels, and so forth, whom they cut out of the chain, cannot, in turn, assume responsibility for the strategic and policy questions that the generals would have wrestled with instead.

Such generals seem more attracted to micromanagement in the kinetic realm. I liken it to the 'Super Bowl' effect. That is, they have spent their entire professional lives preparing for battle and usually look back on their days at field level as the

best part of their careers. So these generals don't want to miss out on 'the big game' simply because they have advanced past it in their careers.

The challenge is that tactical generals often overestimate how much they really know about what happens on the ground. New technologies may give them an unprecedented view of the battlefield and the ability to reach into it as never before, but this view remains limited. For example, during Operation Anaconda in 2002, when the 10th Mountain Division took on Taliban and al-Qaeda fighters in the Shah-i-Khot valley in Afghanistan, generals back in the United States could watch a battle play out live, beamed back to them by a Predator UAS that flew above the fight. The danger, explains Maj Louis Bello, the fire-support coordinator for the division, is that the video tends to 'seduce' commanders, leading them to focus on what the UAS beamed back, as if it told the whole story. 'You get too focused on what you can see, and neglect what you can't see,' Bello said. 'And a lot of the time, what's happening elsewhere is more important.'[14]

Jumping in and out of tactical issues, rather than working them day to day, senior officers also don't have the local context (nor are they usually trained for analysis). Moreover, they sometimes interpose their assumptions onto what they do see. During Anaconda, for example, American commanders viewed live video of al-Qaeda fighters moving across a mountain. Despite the footage staring them in the face, the commanders still thought they must be seeing Americans since they expected to see them there, based on their original plans.[15]

Older generations' lack of familiarity with cutting-edge technology can also heighten misunderstanding from afar. During the 2003 Iraq invasion, for example, overall commander Gen Tommy Franks reportedly

> Older generations' lack of familiarity with cutting-edge technology can also heighten misunderstanding from afar.

became quite possessed with the 'Blue Force Tracker' map, a massive electronic display that showed the exact locations and status of every US unit, as well as Iraqi units facing them. The appearance of so much information, however, proved deceiving. At one stage early in the fight, seeing that the tracking map showed no Iraqi units nearby, Franks concluded that several units in the Army's V Corps were idle, neither moving nor fighting. He reportedly flew off the handle and tracked down his land-forces commander, who then, in his words, was made to eat 'a sh[-?-] sandwich.'[16]

There was only one problem: the audience back at US Central Command saw the battles unfolding at the wrong scale. The blue icons, representing American units, may have looked alone on the large-scale map but were actually locked into one of the toughest battles of the entire invasion, fighting against a swarm of Saddam Fedayeen teams. These small insurgent units had sufficient size to give the

US invasion force fits but not enough to merit their own logos on the high-tech map viewed by generals far from the battle.

Most of all, officers in the field lament what they call the 'Mother, may I?' syndrome that comes with the greater use of these technologies.[17] Rather than rely on the judgment of highly trained officers, generals increasingly want to inspect the situation for themselves. This is fine if the enemy plays along and gives the general several hours to watch the video and decide which bomb to use. But sometimes matters aren't decided on a general's schedule. An Air Force officer in the Middle East described his ultimate frustration, noting a time when even though he had informa-tion that could have saved lives, 'it sat in someone's e-mail queue for six hours'.[18]

GENERALS ON LAKE WOBEGONE

Ultimately, these problems combine to add another new problem. Or, rather, they create a new wrinkle on a venerable truism of war. As Napoléon once said, 'One bad general is better than two good ones'.[19]

A pyramid represents the traditional concept of a military operation, with the strategic commander on top, the operational commanders beneath, and the tactical commanders occupying the bottom layer. Aided by the new technologies, strategic and operational commanders who usurp authority from tactical commanders are erasing this structure from above. The pyramid also finds itself endangered from the sides. As one UAS squadron officer explains, the simultaneous location of reachback operations in multiple spaces presents a major challenge to their command and control.[20] Although UASs fly over Iraq, they launch out of a base in the Persian Gulf and are flown by operators sitting back in Nevada. At each of those locales, 'each commander thinks he's in control of you'.[21] Even worse, everyone clamors for these high-demand assets.

This situation results in 'power struggles galore', tells the squadron commander. Because operations are located around the world, it is not always clear whose orders take priority. Instead, units get 'pulled in many directions because you are in virtual space. Am I at Nellis, or am I at CENTAF [US Central Command Air Forces, the air command in the Middle East]?'[22]

> … the simultaneous location of reachback operations in multiple spaces presents a major challenge to their command and control.

Moreover, by giving everybody in the command structure access to the Internet, the ability to watch what goes on and weigh in on what units should do is not limited to a unit's physical location (Nevada) or virtual location (the Middle East).

During the Shah-i-Khot battle, for instance, the Predators beamed video of the fighting to bases and offices all over the world. Army major general Franklin Hagenbeck, commander of US ground forces during the battle, recalls how 'disruptive' this was since officers in places ranging from Tampa to the Pentagon now felt 'they were in a position to get involved in the battle'. While his team tried to fight the battle in Afghanistan, 'people on other staffs at higher levels would call all the way down to my staff and get information and make suggestions'. In the midst of battle, some officers back in the United States even called in asking for information that they could plug into their own generals' morning briefing, pestering soldiers in combat 'for details that they presumed their bosses would want to know'.[23]

Each of these tasking orders is tough to ignore. Not only do they originate from senior leaders, who can make or break careers, but also they tend to come in on a 'priority basis'. Generals around the world tend to use a logic that humorist Garrison Keillor cites in *Lake Wobegon Days*. Every single one of them considers his or her missions and orders 'of above average' importance. But not everyone can be above average. This 'flattening of the chain of command', summed up retired lieutenant general William Odom, causes 'constipated communication channels' and 'diarrhea of the email' that distracts troops from the mission at hand.[24]

At its worst, this pattern leads to the battlefield version of too many cooks spoiling the meal. A Marine officer recalls that during an operation in Afghanistan, he received wildly diverging orders from three different senior commanders. One told him to seize a town 50 miles away. Another said to seize just the roadway outside the town. The third ordered him not to 'do anything beyond patrol five miles around the base'.[25]

In this case, the officer ultimately chose to seize the town. A veteran of the 1991 Gulf War, he felt confident enough to take the career risk of going with his gut on selecting the right order to follow. But the rise of virtual command from afar threatens to hollow out the experience of those who will move into these command roles in the future. Explains one former Predator squadron commander, 'You may have some general officer sitting behind four Toshiba big screens [TVs] with greater knowledge of the battlefield from the distance. And maybe it works the first time when they intervene and save the day. But my worry is what happens with the next generation. What happens when that lieutenant, who learns thinking the guys in the back are smarter, becomes a colonel or a general. He'll be making the decisions, but not have any experience.'[26]

Where this trend will end, no one is certain yet. Some worry that the ability to reach into the battlefield could even prove tempting to those outside the military.

> At its worst, this pattern leads to the battlefield version of too many cooks spoiling the meal.

Retired marine Bing West expects that 'in the near future … a president will say, "Why do we need these 20 links in the chain of command?"' Enhanced connections could certainly help the commander in chief become better informed about the true situation on the ground but could prove catastrophic if civilian leaders are tempted to intervene, as West puts it, 'trying to play soldier'.[27] Referring to how Pres. Lyndon B. Johnson often tried to influence air operations in Vietnam, former secretary of the Air Force Michael Wynne similarly warned that 'it'll be like taking LBJ all the way down into the foxhole'.[28]

DIGITALLY LEADING

So how must commanders—and even more, the training and development programs that create our cadre of leaders—respond to this new phenomenon that enables them in power and reach but also can enable their worst instincts? Clearly, twenty-first-century generals need to bring certain skills to increasingly unmanned wars in order to be successful. New technologies are creating an environment 'where the strategic, operational, and tactical levels of war can at times be so compressed as to appear virtually as a single function'.[29] The downside of this 'compression' of the battlefield is that it tempts officers to micromanage (the 'tactical general' problem). However, officers who have what Carl von Clausewitz called the 'eye of command', who can find the right balance, will achieve what retired lieutenant general Richard A. Chilcoat once described as 'simultaneous awareness'.[30] This is the 'sweet spot' of future generalship. It involves having a good sense of what is going on at all levels of war and making the appropriate decisions at the right levels.

Developing this skill will not be easy. All the information collected, all the real-time requests, and all the general 'diarrhea of the email' threaten to flood officers with data. Much like their corporate counterparts (often thought of as drones in their office cubicles), twenty-first-century generals fighting with drones will also have to cultivate the ability to manage their in-boxes.

Our professional-development system must put more focus on cultivating an ethic of 'enlightened control'. Generals literally will have the entire battle at their fingertips. With the new networks and technologies, they can watch nearly every action and make every minute decision. But they still do not have an infinite amount of time. At some point, the leader has to turn matters over to subordinates. Generals who can figure out when to intervene, when to delegate,

> … twenty-first-century generals fighting with drones will also have to cultivate the ability to manage their in-boxes.

and when to empower junior troops to act with initiative will enjoy much more success than those who don't trust their force to do anything without them. Striking this balance will become the essence of strategic leadership.

Leaders must also focus on developing the mental flexibility needed to guide a 'learning organization' that adapts to changing circumstances in something beyond just a top-down manner.[31] Senior leaders not only must have open minds themselves but also willingly empower subordinates to wrestle with new concepts and technologies that they don't even understand. As one colonel writes, 'I speculate that the digital general some 35 years from now might not just communicate differently but will actually *think differently* from his or her predecessors, because conceptual behavior itself is evolving during the Information Age'.[32]

Although a general may no longer have to be as fit a fighter as the troops, the way Henry V or Gustavus Adolphus was considered among the best warriors in his army, new technologies do impose certain physical requirements that commanders must cultivate in wartime. For one thing, generals should develop skills at using computers, e-mail, and other information technologies (beyond the ability to make a PowerPoint presentation)—something that once seemed an almost abhorrent concept to leaders. General Chilcoat once predicted, 'To the strategic commander of the Information Age, the laptop computer, or its successor, will be a natural extension of his mind, as familiar as the telephone, map, and binoculars'.[33] Events in Iraq have borne out his lessons.

Likewise, the fact that generals may not need the kind of physical fitness to wield a sword or match their troops in push-up contests does not signal the return of 300-pound-plus generals like nineteenth century commander Winfield Scott. Rather, stamina—not strength—now matters. Command has always been taxing, but it is now becoming a round-the-clock job, no matter the commander's physical location. Thus, generals now need the physical and psychological endurance of a young medical student on call in the emergency room.

Some of these changes might seem immense, but they will not supplant many of the qualities that made great generals in the past. For example, the idea of enlightened control (i.e., giving just enough guidance to officers closer to the scene, so that they can best decide what to do) is nothing new. The great Prussian generals of the nineteenth century called this *Führen durch Auftrag* (leading by task) as opposed to *Führen durch Befehl* (leading by orders). Their ideal was that the best general gave his officers the objective and

> Their ideal was that the best general gave his officers the objective and then left it to them to figure out how best to achieve it.

then left it to them to figure out how best to achieve it. The most famous instance occurred before the 1864 Prussian invasion of the Danish province of Schleswig. The commanding general so trusted his officers that, supposedly, he only ordered that he wanted to sleep in the enemy's capital within the week.

Although this may be a bit too succinct for modern war, the example set by World War II's General of the Army George C. Marshall remains an apt model for twenty-first-century leaders. New inventions like the radio and teletype may have given him the ability to instruct from afar, but Marshall chose to set the broad goals and agenda. He had smart staff officers write up details of the plan but ensured that everything remained simple enough that a lieutenant in the field could understand and implement everything.[34] Similarly, Marine general James Mattis's guidance to his troops before the 2003 invasion of Iraq was just as brief, understandable, and worthy as a guide: 'Engage your brain before you engage your weapon'.[35]

GENERAL 2.0

But the questions of leadership don't just stop at the issue of how much leash commanders give their subordinates. Every decision in a military operation, be it the corporal in the field deciding whether to pull the trigger or Gen Dwight Eisenhower deciding whether to give the 'go' for the D-day invasion, can be broken down into four basic parts, known in the military as the observe, orient, decide, act (OODA) loop. One gathers information, figures out the situation, issues orders, and takes action. Then, the whole cycle begins again.

But technology has shrunk the time inside this decision cycle. Because massive amounts of data come in faster, decisions have to be made quicker. This, for example, led to our turning over the defense against mortars and rockets at major bases in Iraq to the Counter Rocket, Artillery, and Mortar (C-RAM) automated gun system. Humans just couldn't fit into the shorter OODA loop needed to shoot down incoming shells and rockets.

Shortening of time in the decision cycle is not just for the trigger-pullers. The shrinking OODA loop is working its way up the chain to the generals' level. Marine general James Cartwright, former commander of US Strategic Command, predicted that 'the decision cycle of the future is not going to be minutes. … The decision cycle of the future is going to be microseconds'.[36]

Thus, many people think that one last, fundamental change may occur in the role of commanders at war. If the first step of technology's effect on command and control is to force officers to learn how to lead troops fighting from afar, and if the second is to require generals to figure out when to intervene directly in the battle or not, then the final may be figuring out just what command roles to leave to humans, and which to hand over to machines.

The world is already awash with all sorts of computer systems that we use to sift through information and decide matters on our behalf. Artificial intelligence (AI) in e-mail programs filters out junk mail, and AI systems trade billions of dollars on the stock market, deciding when to buy and sell based only on algorithms.

The same sort of 'expert systems' is gradually being introduced into the military. The Defense Advanced Research Projects Agency, for example, created Integrated Battle Command, a system that gives military officers what it calls 'decision aids'—AI that allows a commander to visualize and evaluate plans, as well as predict the impact of a variety of effects.[37] The system can help a command team building an operational plan to assess the various interactions that will take place in it. The system sees how changing certain parameters might play out in direct and indirect ways so complex that a human would find them difficult to calculate. The next phase in the project involves building an AI that plans an entire military campaign.

Real-Time Adversarial Intelligence and Decision Making, the military-intelligence-officer version of this system, is an AI that scans a database of previous enemy actions within an area of operations to 'provide the commander with an estimate of his opponent's strategic objectives'.[38] Similarly, 'battle management' systems exist that not only provide advice to human commanders on actions an enemy might take, but also suggest potential countermoves, even drawing up the deployment and logistical plans for units to redeploy, as well as creating the orders an officer would have to issue.[39] The Israeli military is fielding a 'virtual battle management' AI whose primary job entails supporting mission commanders but can also take over in extreme situations (e.g., when the number of incoming targets overwhelms the human).[40]

> … many people think that one last, fundamental change may occur in the role of commanders at war.

Developers behind such programs argue that the advantage of using computers instead of humans is not only their greater speed and processing power, but also the absence of human flaws—they lack our so-called 'cognitive biases'.[41] Because searching though reams of data and then processing it takes too much time, human commanders without such aids must filter which data they want to look at and which to ignore. This inevitably leads them to skip information they don't have time to cover. Humans also tend to give more weight in their decisions to the information that they see first, even if it is not representative of the whole. This produces something called a 'satisficing' result—a satisfactory, though not the optimal, answer. One Air Force officer planning air strikes in the Middle East, for example, describes how each morning he received a 'three-inch-deep' folder of printouts

with that night's intelligence data, which he could only skim quickly before he had to start assigning missions. 'A lot of data is falling on the floor.'[42]

Emotions also can shape decisions, even the most major command decisions in war. Recent neurological findings indicate that emotions drive our thought processes, including leaders' political decisions, to a greater extent than previously recognized.[43] That is, our idealized concept of how decisions are made in war and politics—rationally weighing the evidence to decide how and when to act—does not tell the full story of how human leaders' brains actually work.

Studies have shown how two underrated factors frequently shape strategic choices in war.[44] The first—powerful emotional experiences that leaders had in the past—often steered their decisions, sometimes decades afterwards, including even decisions on whether to go to war. The second factor concerns how body chemistry affects one's state of mind. People with high levels of testosterone, for instance, are more likely to exhibit aggressive behavior and risk taking; Gen George Custer and Gen George Patton seem classic examples. By contrast, those with low levels of serotonin are more prone to depression and mood swings, typical of both Hitler and Pres. Abraham Lincoln.[45] As these examples show, emotions can shape a leader's decisions both for better or worse, so to pull emotions out of the equation could yield widely divergent results.

> Emotions also can shape decisions, even the most major command decisions in war.

Setting aside the worry that such artificial decision systems are what enable robots' takeover of the world in sci-fi movies like *The Terminator*, machine intelligence may not be the perfect match for the realm of war for the very reason that it remains a human realm, even with machines fighting in it. 'The history of human conflicts is littered with examples of how military forces achieved results that no algorithm would have predicted', according to an Air Force general.[46] And he is right. Command may seem just like a game of chess to some, but war doesn't have a finite set of possible actions and a quantifiable logic of zeros and ones. Instead, 'in war, as in life, spontaneity still prevails over programming'.[47]

Even so, the Pentagon's work on such programs continues. Few see robot generals anytime soon, but many do think that the most likely result for future command and control in the decades ahead is a parallel to the Department of Defense's 'war fighter's associate' concept, which is becoming a part of the Army's Future Combat Systems plans. The latter call for US units to have mixed teams of soldiers and robots fighting together in the field. We may soon have to wrestle with a situation in which their future commanders back at the base may have a staff that mixes advice from human officers and AI as well. Retired colonel James Lasswell of the Marine Corps

Warfighting Lab thinks that the various technological decision aids will likely evolve into an AI 'alter ego' for the commander. A sort of artificial aide-de camp to future generals, this technology would 'automatically send and collate information for him to have at his beck and call'.[48] As with the issue of tactical generals, even though this outcome may enable leaders, it also opens up a whole new array of questions that once seemed science fiction but may well lie in our not-too-distant future.

ROBOT CONCLUSIONS

When exploring the future role of machines in war, people often want to focus on the obvious issues of whether a robot should be armed or how much autonomy should be given to keep the 'man in the loop'. But it is a far more complex world that we are entering.

By providing generals insight into the front lines—something they have lacked since the age of gunpowder and telegraphs—new technologies like unmanned systems are lifting many of the burdens of command. But in giving newfound reach and visibility to the commander, they also add many new challenges. Most importantly, these technologies present a serious test for simultaneously managing an amazing array of possibilities and information while resisting the temptation to micromanage subordinates.

> When exploring the future role of machines in war, people often want to focus on the obvious issues …

But the trend doesn't stop there. Human commanders and their staffs may even one day face a challenge to their own role as the pace and complexity of war continue to grow.

In short, where the ever-expanding role of machines in war will one day take us is a question that used to only be suitable for science-fiction conventions. Today's technologies, however, are bringing this question to our real-world battlefields.

Disclaimer: The conclusions and opinions expressed in this document are those of the author cultivated in the freedom of expression, academic environment of Air University. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force or the Air University.

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'SMUG AND COMPLACENT?'

OPERATION TELIC: THE NEED FOR CRITICAL ANALYSIS*[1]

DR DANIEL MARSTON

ABSTRACT

British operations leading the Multi-National Division Iraq (South East) (MND (SE)) Iraq were expected by many to be highly successful due to the British Army's long and distinguished history of successfully prosecuting counterinsurgencies around the globe. However, complacency and hubris, coupled with an inadequate understanding of the mission facing MND (SE) foiled British attempts to achieve success. It was only through a 'bottom-up' revision of the British Army's efforts, led by junior and mid-ranking officers, that significant reforms were made. These helped the British Army increase its effectiveness in line with US efforts, and allowed them to begin handing over control for security to their Iraqi counterparts. How they achieved this success, and the often-difficult progress toward this outcome, form the subject matter of this frank and insightful article.

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THE CURRENT SITUATION

The British Army's campaign in Iraq, its overall impact, and whether it has been a success or failure are currently topics of intense discussion in the UK press, military and government communities. Recently, the Chief of Defence Staff referred to Britain as having become 'too complacent' and 'smug' about its experiences in Northern Ireland and Bosnia and their application to operations in Iraq.[2] Many within the Army do not dispute this, but I think the opposite viewpoint is also worth stating: that there were an equal number, if not more, officers, non-commissioned officers (NCOs) and soldiers who were *not* smug, and who actively sought to know more about how to reform and adapt their doctrine and tactics for the counterinsurgency (COIN) campaign in Multi-National Division (South-East) (MND (SE)).[3]

Many officers and soldiers lay blame for some of the Army's bigger mistakes at the feet of Whitehall, citing the lack of a 'comprehensive approach', and they are correct to do so. Others blame limited public support for the UK Government's lack of strategy and resources. Whitehall was guilty of not providing the support, troops and long-term mindset that were crucial to carrying out a successful COIN strategy in MND (SE). The British Army was not on the verge of defeat in 2007, but Whitehall's and the Permanent Joint Headquarters' (PJHQ) strategy was flawed and close to failure. Many officers felt that PJHQ was guilty of 'watering down' assessments. As one senior officer noted:

> Many officers and soldiers lay blame for some of the Army's bigger mistakes at the feet of Whitehall …

> Many of us feel that, notwithstanding limited political and popular support for the Iraq campaign, too much military advice from theatre was watered down on the basis of perceptions of what the market would bear. In contrast with the US our people in Basra struggled to get their views over, as reflected in our lukewarm response to the SSR challenge right up to Charge of the Knights (CotK). Personally I point the finger at PJHQ who, in my view, filter straight up advice on our requirements. The whole construct lacks the dynamism and necessary tension that you see in the US relationships.

The fact that the situation has been turned around is mainly to the 'in-theatre' Army's credit. Despite this, all was undeniably not well within the Army, and many of those who have served on TELIC operations have not hesitated to say so.

OBSERVATIONS FROM TELIC

I had the opportunity to meet, brief, debate with and observe many British units in MND (SE) on each TELIC from July 2006 through September 2008. The following is a synopsis of my observations and discussions with units either preparing for deployment or already serving during this period. As an American military historian working as a COIN advisor who has extensively studied the British Army's record of learning and adapting in war, the Iraq campaign has presented an interesting, sometimes frustrating, but always an important case study.

The successful British COIN campaigns of the last century have shared a list of key ingredients. This list has been used within the British Army as a benchmark, and within the US military as a guide, as even a cursory perusal of FM 3-24[4] and recent comments from Multi-National Force – Iraq (MNF-I) and United States Central Command (CENTCOM) demonstrate:

- Comprehension of existing doctrine
- Adaptation to local situations and learning from mistakes
- Risk-taking organisations
- Harmony of effort
- Small-unit approach
- Corporate memory within theatre headquarters
- Appropriate training
- Reconciliation amongst their enemies
- Ongoing education in COIN
- Population security
- Understand local perspectives—non-Western metrics
- Raise, mentor and fight with indigenous forces (army/paramilitary police/ local auxiliaries)

The necessity of nearly every one of these ingredients has been debated in my own discussions with officers, NCOs and soldiers from divisional level down. Many were open to the need for reform and hoped that the need would be recognised at all levels of the Army.

> … the British Army was considered the leader in COIN, and its forces were a sought-after commodity.

Observers expected that British forces going into Afghanistan and Iraq, given their history of success in COIN, would automatically be better suited to waging 'wars amongst the people' than their American counterparts. British officers and NCOs provided many layers of advice, from formal discussions in the Pentagon to attachments to American units and formations serving in the Sunni triangle

and Baghdad in the summer of 2003.[5] At that point in time and for a few years after, the British Army was considered the leader in COIN, and its forces were a sought-after commodity.

Meanwhile, the British Army, in practice, appeared to be losing its way in terms of practical application of key facets of COIN. Many officers and NCOs, while able to discuss 'tactical' approaches to COIN knowledgeably, were apparently unaware of important operational and strategic aspects of COIN that were having an immediate effect in MND (SE). Some British officers, NCOs and soldiers demonstrated uncertainty about not only the environment in which they found themselves in MND (SE) during 2003–05, but also their mission there, which was variously described as peace support operations, nation-building and, sometimes, COIN.[6] The overarching narrative for this mission was missing, and the lack of a coherent COIN strategy coming from MNF-I in Baghdad during this period only exacerbated the situation.[7]

It was not uncommon during this period for officers of the Army to be unable to list the British COIN principles, define their meaning, or discuss past British successes in a meaningful way. Many were not familiar with the work of the key theorists such as Major General Sir Charles Gwynn, Sir Robert Thompson and General Sir Frank Kitson. Many within the Army have stated this was due to a lack of education in COIN, from RMAS through to Staff College. One British officer commented, 'personally, I feel that British doctrinal and historical knowledge of COIN is actually a bit of a myth'.[8] Some criticised the validity of the 2001 Army Field Manual on COIN in isolation, with no consideration of whether its principles were actually being applied in theatre. The Army was not helped by a chorus of academics and civil servants who insisted that none of their previous COIN experience and doctrine was relevant to operations in Iraq. Most of these claims have since been debunked by the United States, USMC and British Army's recent successes.

As the Americans began to adapt to deal with the insurgencies in both Afghanistan and Iraq, they followed the British tradition of bottom-up reform. Many American officers at junior and mid-level rank began to educate themselves in an effort to understand the complexity of a type of warfare dramatically different from the one for which they had been trained. Officers and NCOs began to examine historical case studies from many countries, trying to find solutions for the problems they were facing. Even commanders of brigade combat

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teams, regimental combat teams and divisions within MNC-I and MNF-I in such places as Tal Afar, Al Qaim and Ramadi started to self-educate, but until early 2007 these initiatives were taking place at the tactical and operational levels in-theatre.[9] This bottom-up reform was formally linked to higher levels by key generals, such as Petraeus and Mattis, who allowed—and encouraged—this change of mindset. The change of command which took place at the beginning of 2007, with Petraeus taking over MNF-I and General Odierno who was already in charge of MNC-I, reinforced this trend.

Some in the British Army began to notice that the approach in the American sectors was becoming increasingly 'population-centric', and decided that this was what was missing in the south. They embraced the concept, and began to agitate for equivalent changes, both to their own professional training and the overall strategy for MND (SE). Many British commanders were aware that the MNF-I COIN guidance issued in July 2007 was not being followed. It stated the following key goals, most of which the British Army could not claim to be achieving in MND (SE) in the summer and autumn of 2007 and early 2008:

- Secure the people where they sleep
- Give the people justice and honour
- Integrate civilian/military efforts—this is an inter-agency, combined arms fight
- Get out and walk—move mounted, work dismounted
- We are in a fight for intelligence—all the time
- Every unit must advise their Iraqi Security Forces partners
- Include ISF in your operations at the lowest possible level
- Look beyond the IED—get the network that placed it
- Be first with the truth
- Make the people choose[10]

One incident that illustrates this shift concerns the Multi-National Forces – Iraq COIN Center for Excellence (CFE), which was based in theatre at Taji, Iraq. At this school, incoming RCT and BCT command staff spent one week receiving briefings on COIN and its application in their future area of operations.[11] The structure of CFE was based upon a British in-theatre training centre, the Far East Land Forces Training Centre, Kotta Tingi, Malaya in the 1950s.[12] A small group of us, including a handful of British officers, called for greater British involvement at CFE as staff members, to attend the course to learn lessons from other areas, and to deploy incoming British commanders to the course. The US military staff at CFE articulated their willingness throughout 2007 and 2008 to support a British brigade deploy-ment and course. Despite great interest from many within MND (SE), and efforts from a number of people, this British involvement only occurred in February 2008, and this is unfortunate. Both armies would have benefited from sharing important information and feedback.

British units and formations in and out of theatre have had visiting academics come and talk about current and past operations on their own initiative. These presentations were likely to spark debates about whether the British were actually carrying out a COIN operation in MND (SE). Young officers respectfully differed from commanding officers who asserted that the British were achieving success with the way operations were being run. Other commanding officers felt that Basra needed to be cleared, these areas held and the support of the government rebuilt, using both British and Iraqi soldiers. These discussions produced plans, some of which were carried out on operations, such as Operation SINBAD. Operation SINBAD has been seen as an extension of some of the debates that were taking place across MND (SE) in the second half of 2006. However, Operation SINBAD did not achieve clear, hold, build due to the lack of resources, from both Whitehall and MNC-I, and a lack of political will to see the operation through. The change to countering 'criminality in Basra' in January 2007 did not help the internal debate for a change of strategy in MND (SE).

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Land Command personnel also took note of these initiatives, with the result that the Land Warfare Centre formalised a counterinsurgency cadre for all outgoing brigades deployed to Afghanistan.[13] But here also, the institution's response was fragmented: many of these efforts initiated at the lower levels were stymied by a lack of support from higher up the chain of command and across Whitehall.

The rotation of divisional headquarters, brigades and battalions within MND (SE) occurred every six months.[14] As is commonly known throughout the history of COIN, the British experience in particular, six months is not long enough to establish a true presence on the ground and to develop relationships with local leaders. This was seen as counterproductive by many commanders. Many divisional and brigade headquarters came in with their own concept of operations, and commanders commented repeatedly that successive TELICs were not joined up properly. An overall campaign plan for the south, shift to Provincial Iraqi Control and withdrawal, was lacking. The role of MND (SE) divisional headquarters was not fully established until TELIC 5, which exacerbated the lack of continuity for those operating in the region. Officers repeatedly cited previous command structures set up in Malaya, Kenya, Dhofar and Northern Ireland, and asked why MND (SE) was following a different pattern. Units fed back that continuity in terms of intelligence gathering, reconstruction efforts and working

with indigenous forces was lacking throughout most of the campaign. As one officer stated to me:

> Your points relating to rotation of commands through the 6 month tour structure is at the root of most of our problems from Basra and also now in Afghanistan. Not only does it work against our accumulation of knowledge and understanding of the situation, but it also ultimately undermines our reputation in the face of our US allies who think it's a joke that we scuttle back home after only 6 months in theatre. The extension to 9 months for Staff officers is an improvement but still doesn't compare to the American system. Collation of intelligence was dire when I was out there. It was clear that intelligence from the previous BG's in Maysaan had either been thrown away or never collected in the first place. We started on a blank canvas. My patrol reports were always praised for their level of detail, but there was never any follow-up, never any pursuit of some significant leads I uncovered when in lengthy dialogue with the local Sheikhs. I think this was inherent throughout the chain of command.[15]

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TRAINING AND MENTORING OF THE IRAQI ARMY

Despite earlier successes with British Army battalions mentoring the Iraqi Civil Defense Corps (ICDC), who had trained and operated alongside their British counterparts, by 2006 the British had taken a very 'hands-off' approach to the Iraqi Army. Many observers in MNF-I and MND (SE) found this strange, considering the British history of creating and training local security forces. MNF-I had made its own mistakes building up and transferring responsibility to the Iraqi Army too early, but they also created some excellent initiatives to enhance the Iraqi Army abilities, such as joint US/Iraqi operations in Tal Afar, Al Qaim and Ramadi. The 'surge' of 2007 was not, as is commonly believed, primarily about numbers, but really about how the Americans and the Iraqi Army deployed their forces in Joint Security Stations throughout contested areas in an attempt to protect the population. Ironically, many British commanders in late 2006 were thinking along the same lines. They spoke of embedding British units, such as companies, with Iraqi Army units together to fight and live together to clear, hold and build in Basra, and some even did it in Maysaan province. Unfortunately, at the end of 2006, this type of initiative was considered politically unacceptable in London, and became a major issue with the drawdown of troops.[16]

Despite this, British troops deployed with two battalions of the Iraqi 10 Division to Baghdad during the 'surge' in 2007. Observing this, many British commanders were perplexed and frustrated with the hands-off approach in general use in MND (SE) throughout 2007 and early 2008. As a result, by February/March 2008, commanders within MND (SE) and 4 Brigade were ready to take a different approach as the Iraqi 14 Division prepared to clear Basra. This was reflected in an unofficial document agreed by the Commander 4 Brigade, and which was presented to MNF-I. It became the starting point for a potential shift of strategy in MND (SE) in February 2008. While many battalion commanders agreed with this new approach, it would take the launch of CotK (Operation Charge of the Knights) to truly facilitate the plan. This approach made the following points:

> Contrary to many press reports, the British were not embarrassed by the CotK

- General Mohan's (COIN) plan for the retaking of BASRA is a key development—14 DIV must win this fight and the British must support it in all aspects
- British assets in terms of 4 Brigade and future TELICs need to support this effort in many manners—this will provide a focus of effort for the British officers, NCOs and soldiers as well as playing a role in the future pacification of BASRA and BASRA province
- British officers, NCOs and soldiers can be embedded across many lines of operation within 14 DIV—from staff officers, ISTAR etc to platoon to coy embedded roles
- This future plan will need to be briefed to MNC-I and MNF-I so they clearly see a plan developing for this important area of IRAQ with major British support—which will be well received by many sceptics in BAGHDAD.[17]

The CotK operation occurred earlier than anyone within MNF-I, American or British, expected, on 25 March 2008.[18] There were many reports of the 'five-day' delay to support the efforts of the Iraqis. The timeline for the CotK and the British involvement is a little bit different; there was a delay of only three days after the 14 Division attempted to clear the city. The first reinforcement of Iraqi units from the 1st Iraqi Division began to arrive on Sunday and the first US Military Transition Teams (MiTTs) arrived on Monday. The first US MiTTed Iraqi Army units went into Basra late Monday/Tuesday. General Mohan requested British MiTTs for 14 Division—a major reversal of his previous position. The 1 SCOTS MiTT went in to support the Iraqi 14 Division on Wednesday evening, earlier than expected in London. The British commanders on the ground made the decision to commit earlier than expected. (According to some sources, the unofficial document helped commanders shape what was needed, when restrictions from PJHQ and Whitehall

were lifted.) Contrary to many press reports, the British were not embarrassed by the CotK; on the contrary, they welcomed the opportunity to demonstrate their professionalism and their ability to utilise the key ingredients in COIN warfare, learning and adapting, in a joint effort with the USMC and US Army MiTTs and the Iraqi 14 Division to clear the city of Basra. Reporting on CotK has largely failed to note the efforts of the General Officer Commanding at the time to support the forward headquarters of XVIII ABN Corps, as it came south to help direct the operation.

While MND (SE) and 4 Brigade (and, later, 7 and 20 Brigades) as well as personnel from ARRC enhanced the effort with proper embedding of training teams amongst the Iraqi 14 Divsion and Basra Operations Command (BaOC),[19] they were not the first to recognise that the change was needed. Many other officers from earlier TELICs felt the same way, and it happened that these three brigades were on the spot and had the capability and willingness to do what was needed. Adaptation within MND (SE) continued as British MiTTs travelled around in Iraqi Army vehicles, which helped create more trust within the advisory mission.

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Recent efforts, dating from March 2008, have helped to foster the establishment of a properly trained and led Iraqi 14 Division. This initiative was preceded by extensive debate about the role of the British Army in building up the Iraqi Army. In the course of this debate, many useful lessons from past British experience of training indigenous forces were brought up, only to be rejected.[20] This, I feel, was a mistake. If the end goal of this initiative was to withdraw and hand over to the Iraqi Army a reliable force capable of dealing effectively with insurgents in MND (SE), the way in which the advisory mission set out to achieve this was disjointed, to say the least.

THE LESSONS OF IRAQ

The British Army cannot turn its back on a difficult campaign and disregard the lessons, some of which are admittedly very tough to swallow. It must delve into its own experiences and extract the lessons that it can take forward for operations in Afghanistan and beyond. As one officer noted: 'We are putting domestic military considerations ahead of campaign success; and it will cost us more in the long run. Again it is about remaining true to our history and COIN experience.'[21]

The British Army has historically been considered at the forefront of military institutions learning from and adapting in various campaigns. This has been true in both conventional and unconventional warfare, from the forests and plains

of North America in the eighteenth century to Sir John Moore's reforms which enabled the Peninsula Army to perform well; from the colonial conflicts of the nineteenth century to the Second Anglo-Boer war; from the trenches of Flanders to the jungles of Burma in the Second World War; and from there to the jungles of the Malayan Emergency, the *jebel* of Dhofar and, finally, to the streets of Belfast and Londonderry.[22] The history of British experience in creating, as well as living, fighting and dying with indigenous forces, is generally considered one of the British Army's hallmarks of excellence. Many armies have also expressed admiration bordering on awe at the British Army's ability to learn and adapt across the spectrum of conflict in modern warfare. Other militaries, including the US Army and the USMC, have undertaken research and interviewed British officers and NCOs in order to better understand its abilities to adapt.

Whitehall, and also some senior officers, failed to understand the nature of the growing insurgency in the south, and as a result they failed to implement a COIN strategy until the eleventh hour. This failure is all the more strange because, while some senior officers and civil servants in Whitehall were asserting, as late as 2007, that there was no insurgency in MND (SE),[23] the Army's *Stability Operations in Iraq (OP TELIC 2-5): An Analysis from a Land Perspective*, published in 2006, which specifically refers to insurgency and the need for a COIN approach throughout, was in circulation within the Army.[24]

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The British campaign in MND (SE) was not a glowing success, as some within Whitehall and PJHQ may try to claim. The fact that it will end on a positive note, as of the summer of 2009, has more to do with bottom-up reform within units and formations in theatre, and less to do with planners in Whitehall and PJHQ. The war has been changing in Iraq since the beginning of 2007, and many within MND (SE) recognised early on that different approaches might be needed. Some British commanders expressed concern that the 'withdrawal' strategy from Basra to the COB would cause major splits with MNF-I. Some even feared a US brigade combat team or USMC regimental combat team coming south to clear the city, underscoring their inability to do so. The decisions taken in Whitehall in 2006 and 2007 promoting Provincial Iraqi Control and handover, as well as withdrawal to the Contingency Operating Base, were not linked to the eventual success of the CotK; they could not have been, since the CotK was not part of this strategy. In some significant ways, they were two different campaigns.

CotK and the good work done by MND (SE), 4, 7 and 20 Brigades and the Iraqi 14 Division have allowed the British Army to 'leave with honour'. Some within the

Army, myself included, felt that the 'honour of the army' was at stake in 2007. This was stated in an internal report written in March 2007, highlighting the shift of strategy in the rest of Iraq and the need for the British to refocus their campaign. This report was seen by many of the senior staff within the Army and by General Petraeus. However, in the end, there was no major shift for the British efforts in MND (SE) until March 2008.

It is important to remember that many officers, NCOs and soldiers from previous TELICs were part of this eventual success; their efforts to debate, relearn valuable lessons and awareness of the US military's successful reforms led the way to the current positive state of affairs: withdrawal from a reasonably stable Basra.

It is not a question of whether the Army is learning, but of how fast, how deep and how joined up the learning process is. It is also a question of how fast the politicians and other governmental departments are learning, and how prepared they are to accept the risks and costs that are an integral part of following the route that these lessons dictate.

British officers, NCOs and soldiers performed their duties throughout TELIC professionally and with courage, and they can be proud of their efforts. US forces have made no criticism of the British Army's fighting abilities; the issues for many, on both sides of the Atlantic, stem from the lack of a coherent strategy for MND (SE): one that was closely linked into the rest of MNC-I and MNF-I, and that would take account of the changing conditions in the whole of Iraq, especially in 2007–08.

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WHAT SHOULD HAPPEN NEXT

The British Army's experience in Iraq needs careful critical analysis from within its own ranks as well as from outside, in order to draw out both negative and positive lessons. The Army needs to understand why Iraq was a difficult campaign; and to recognise its own fundamental role in changing strategy, policy and ultimately, the final outcome in MND (SE). The campaign in Basra has ended differently than many in MNF-I, myself included, expected in late 2007. Among other things, it is part of the Army's role to ensure that the British Government, the higher echelons of the Ministry of Defence, and the British press and population better understand its responsibilities and challenges. The next major debate that needs to occur focuses on the lessons from this campaign. Some of these will be difficult to process and apply. As many know, COIN campaigns require resources, funding, boots on the ground, specialists from

across government, time, a clear understanding of COIN across government and the support of the people, both at home and in the theatre of operations. Will Whitehall and PJHQ be willing to take the lessons on board, and do something to make sure that these mistakes are not repeated in Afghanistan and future COIN campaigns?

The Army cannot, and should not, simply dismiss the valuable lessons of the last six years as they 'move on' to focus their attention fully on the COIN campaign in Afghanistan. Many British officers with whom I have met have questioned why the Americans turned their back on their Vietnam experience when there were so many excellent lessons to be learned. The answer is that they did so because the campaign was difficult, complex, and ultimately unsuccessful. As a result, the American military has lost many lives in Iraq and Afghanistan trying to learn lessons, some of them from Vietnam, that they had not previously troubled to absorb. As insurgency campaigns in Afghanistan and Iraq grew in strength and intensity, a significant number of American officers, NCOs and soldiers discovered that the doctrine and tactics they were using were not bringing the results they wanted. So they sought to reform their own military systems to adapt to the wars they found themselves engaged in, delving into others' experiences, many of them from British Army campaigns. The Americans are the first to admit that there is still much work to be done in this area. Learning and adapting are, and should be, ongoing tasks. All of this is applicable to the current debate within the British military.

> This exercise needs to avoid the 'blame game' that often happens in such internal debates.

This exercise needs to avoid the 'blame game' that often happens in such internal debates. The US military is attempting to avoid this in its own assessment of failures and (more recently) successes in Iraq, and such finger-pointing is detrimental to the honest discussion and analysis that are critical to the effective conduct of current and future operations. Any analysis that the British military undertakes should be at pains to neither blame nor commend specific people, whether in theatre or in Whitehall, but focus instead on evaluating operations and results, including admitting that mistakes were made, and learning lessons from them.

In discussing how best to analyse and learn from the British campaign in MND (SE), a number of interested parties have echoed, knowingly or not, General Sir Frank Kitson's famous quote about the role of the military in promoting understanding of the realities of insurgency and COIN:

> We have seen that it is only by a close combination of civil and military measures that insurgency can be fought, so it is logical to expect soldiers whose business it is to know how to fight, to know also how to use civil measures in this way. Not only should the army officers know about the subject, they must also be prepared to pass on their knowledge to

politicians, civil servants, economists, members of the local government and policemen where necessary. The educational function of the army at these critical moments is most important. Amongst senior officers in particular, ignorance or excessive diffidence in passing along such knowledge on can be disastrous.[25]

Over the last few years there have been signs of improvement in COIN education across the British Army, with revised modules for RMAS cadets, an expanded and updated Module C for captains and the introduction of lectures from both US and UK practitioners for junior to mid-level officer corps at RMAS. This cross-pollination has extended to brigade and division level headquarters seeking to share information with US Army and USMC mid- and senior level officers. There are also indications of reforms at Staff College, and some officers have expressed a desire for greater linkage between courses run by RMAS, those run by the Staff College and other potential education initiatives that may take place. The system is by no means perfect, or complete, but the will to continue learning and adapting, in the educational as well as the operational sphere, has been established. British officers, NCOs and soldiers have realised that COIN is about more than training.

Lessons from Iraq have resulted in some demonstrable progress. The handling of deployments and support for Afghanistan operations (HERRICK) are currently being debated, with positive progress being made. The fact that the British Army has stated that it is on a 'campaign footing' has helped shift the discussion a bit for some within the media and population. The British Army is close to publishing its updated version of the COIN manual, which will include important lessons from Iraq from both the US and UK perspectives. The British 6 Division Headquarters will serve for a year to allow for better continuity of effort. The outgoing brigades are being briefed and are debating many of the important lessons from Iraq and Afghanistan, from both the British and American perspectives. Finally, a Land Stability and COIN Centre has been established to help coordinate all the efforts of training, education, lessons learned and other pieces for the Army. This is all good news, but for many in the Army, the most pressing need is for these reforms to go deep and long, and to help join up disparate groups within the Army who are trying to reform independently.

ENDNOTES

1   What follows is a military historian's (who also acted as an advisor) view of efforts in MND (SE). I have also had the opportunity to meet with, brief, debate and observe units and formations of the United States and USMC in Iraq, where many of these themes were discussed in depth. I have been engaged in the COIN reform debate on both sides of the Atlantic (and beyond) since 2003. I have met many officers, NCOs and

soldiers who have demonstrated their willingness to learn in order to adapt to changing conditions on the ground throughout MND (SE). Bottom-up reform has already occurred in the British Army; however, many officers, NCOs and soldiers want to make sure that it goes deeper into the Army's culture, in order to better prepare the British Army not only for Afghanistan but also for future COIN operations. I want to thank the many officers who read an earlier draft of this paper and offered some of their thoughts.

2   'British soldiers and their discontents', *The Economist*, 29 January 2009, <http://www.economist.com/world/britain/displaystory.cfm?story_id=13022177>

3   This issue is not specific to being British. In the American military, there is concern that some American commanders with recent success in Iraq will become complacent, dismiss lessons from other operations, or fail to recognise that what worked in Iraq will not necessarily work in Afghanistan.

4   Headquarters, Department of the Army, FM 3-24 – *Counterinsurgency*, December 2006,<http://www.usgcoin.org/library/doctrine/COIN-FM3-24.pdf>

5   See Pete Mansoor, *Baghdad at Sunrise*, Yale University Press, New Haven, 2008.

6   See *Stability Operations in Iraq (OP TELIC 2-5): An Analysis from a Land Perspective*, Army Code 71844, for examples of some of the confusing messages.

7   The Americans are aware of their shortcomings during this period and have attempted to deal with the issues internally and externally. They are aware that they allowed the British to detach themselves from the overall command structure at times, due to their own issues in the rest of the country, and realise that some of the blame for confusion in the British mission falls to them. However, many Americans remain perplexed that the British did not re-evaluate their strategy in the south following the change of strategy in 2007.

8   Conversation with a senior officer in 2007.

9   See Brian Burton and John Nagl, 'Learning as we go: the US army adapts to counterinsurgency in Iraq, July 2004–December 2006', *Small Wars and Insurgencies*, Vol. 19, No. 3, 2008.

10   MNF-I COIN Guidance, July 2007.

11   Marine Corps Center for Lessons Learned Newsletter, Vol. 4, No. 2, February 2008, <http://smallwarsjournal.com/documents/mccllnewsletterfeb08.pdf>. See pp. 7–8 for more details on the course.

12   See Daniel Marston, 'Lost and Found in the Jungle' in Hew Strachan (ed.) *Big Wars and Small Wars*, Routledge, 2006.

13   The last Iraq-bound BDE was prepared, but will not deploy due to plans for withdrawal by summer 2009.

14   While some commanders feel that battalions can be rotated every six months, the deployment of brigade and divisional headquarters should have been longer. Many feel that at least a year deployment should occur for these formations. This did not occur in MND (SE).

15 Conversation with a British officer who has served in both Iraq and Afghanistan. It is worth noting that, having absorbed these lessons, the British Army is trying to avoid this mistake by using a different structure in Afghanistan for divisional staff.

16 The numbers needed to properly embed with an Iraqi Division and the forces needed as 'quick reaction forces' (QRF) to support the MiTTed Iraqi Army units would be quite high. The US Army and USMC attached a nine-man team to each battalion and there was a company QRF in reserve to support the IA battalion. The British drawdown would not allow for these numbers. PJHQ and Whitehall can best answer why they did not understand the need for the numbers. 'Commute to work' advising never could have sufficed; and even though this was well known by the end of 2006, PJHQ and Whitehall continued to promote a 'hands-off' policy.

17 The author helped to draft the document discussed here, and presented it to General Petraeus' staff in February 2008. General Petraeus' staff responded with ambivalence: they were pleased to hear that officers were thinking about a different approach to the mission in MND (SE), but pessimistic about the PJHQ and Ministry of Defence response.

18 The offensive was not supposed to begin until July 2008, after which the Iraqi 14 Division would have been properly trained for the following offensive.

19 Basra Operations Command was the overall Iraqi security headquarters in Basra with command over all army, police and border guards. It was mentored by British officers from ARRC, who helped design the eventual COIN campaign that brought success.

20 These included case studies and systems that had been created in the past to select the correct officers and NCOs for specific roles, as well as aspects of support provided to the missions. Another key factor from past operations that was discussed was risk. Many British models of working with indigenous forces were predicated on a certain level of risk acceptance, something that has been missing for many commanders when they discussed the past as well the evolving US Army/USMC approaches with their MiTT mission.

21 Correspondence with a senior officer.

22 There are many books focusing on the British Army's history of reform over the last two hundred years, including Stephen Brumwell, *Redcoats: The British Soldier and the War in the Americas*; Raymond Callahan, *Churchill's Generals*; David French, *Raising Churchill's Army* and *The British General Staff: Reform and Innovation, 1890–1939*; Paddy Griffith, *Battle Tactics on the Western Front*; Paul Harris, *Men, Ideas and Tanks*; Stephen Hart, *Montgomery and Colossal Cracks: The 21st Army Group in Northwest Europe*; Daniel Marston, *Phoenix from the Ashes: The Indian Army in the Burma Campaign*; Thomas Mockaitis, two volumes on British COIN; Tim Moreman, *The Army in India and the Development of Frontier Warfare* and *The Jungle, the Japanese and the British Commonwealth Armies at War*; John Nagl, *Counterinsurgency Lessons from Malaya and Vietnam;* Timothy Harrison Place, *Military Training in the British*

Army, 1940–1944; Hew Strachan, *From Waterloo to Balaklava*, *Politics of the British Army* and *Big Wars and Small Wars*; Tim Travers, *Killing Ground: The British Army, Western Front and the Coming of Modern Warfare;* and Trevor Wilson, *Command on the Western Front: The Military Career of Sir Henry Rawlinson*.

23   There are numerous articles from 2004 on discussing the insurgency in MND (SE) as an accepted fact; the following are some good examples: Luke Harding and Michael Howard, 'British soldier killed in Basra', *The Guardian*, 18 August 2004 <http://www.guardian.co.uk/world/2004/aug/18/iraq.military>; 'UK soldier dies in Basra battles', *BBC News*, 9 August 2004, <http://news.bbc.co.uk/2/hi/middle_east/3549600.stm>; Mark Oliver, 'Iranian troops "training Iraqi insurgents"', *The Guardian*, 12 October 2005 <http://www.guardian.co.uk/world/2005/oct/12/iraq.iran>; Patrick Devenny and Robert T McLean, 'The Battle for Basra', *The American Spectator*, 1 November 2005 <http://spectator.org/archives/2005/11/01/the-battle-for-basra>; Thomas Harding, 'British to evacuate consulate in Basra after mortar attacks', *Telegraph.co.uk*, 30 October 2006 <http://www.telegraph.co.uk/news/worldnews/1532800/British-to-evacuate-consulate-in-Basra-after-mortar-attacks.html>; Richard Norton-Taylor, 'Iraq: the British endgame', *The Guardian*, 21 February 2007 <http://www.guardian.co.uk/politics/2007/feb/21/iraq.iraq3>; Michael Evans, 'Iraq troop pullout "possible within a year"', *Times Online*, 4 June 2007, <http://www.timesonline.co.uk/tol/news/world/iraq/article1878705.ece>; Gethin Chamberlain, 'Message from Basra: "get us out of here"', *Telegraph.co.uk*, 28 October 2007 <http://www.telegraph.co.uk/news/uknews/1567603/Message-from-Basra-%27get-us-out-of-here%27.html>.

24   There were many commanders in theatre who called the campaign in MND (SE) a COIN campaign, from 2004 on.

25   General Sir Frank Kitson, *Bunch of Five*, Faber & Faber, London, 1977, p. 300.

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CHALLENGES

HOW STUPID ARE WE?

LIEUTENANT COLONEL RICHARD KING

ABSTRACT

This article[1] argues that thinking is more difficult than we might imagine. Explaining the purpose of thinking and examining some of the issues we all face, the author concludes that the Army has problems with thinking. We must address issues with the way we think as individuals, in teams and organisationally if the Army is to become truly adaptive.

… there are no positions in Army or the NAG [non-Army Group] that list critical thinking skills as either a desirable or mandatory requirement.[2]

A man was driving along a country road when he realised he had a puncture in his kerbside front tire. As he pulled the car over, he noticed that he was outside a psychiatric hospital. He started to change the wheel: first, he loosened the wheel nuts on the wheel, and then jacked up the car. Next, he removed the wheel nuts and placed them within easy reach on the edge of the road. He then removed the wheel and took it to the back of the car, swapping it for the spare wheel. When he returned to the front of the car and placed the spare wheel on the ground, he accidently knocked the wheel nuts into a drain. As hard as he tried, he was unable to either remove the drain cover or reach the wheel nuts, tantalisingly out of reach. He sat down, put his head in his hands and wondered what he was going to do.

He soon realised that a patient from the hospital was standing nearby, watching him.

'I suppose you think this is funny,' said the driver.

'No, I don't,' replied the patient.

'I don't suppose you could help me. I need to get to the next town for a meeting, but I don't have any wheel nuts to attach the spare wheel to my car.'

'Well,' said the patient, 'why don't you just take one wheel nut off each of the other three wheels and use them to attach your spare wheel? That should work as long as you don't drive too fast.'

'That's brilliant! It seems ironic that you're a patient in a psychiatric hospital and yet you were able to think of a solution to my problem when I couldn't.'

'Yes,' replied the patient, 'but while I might be insane, I'm not stupid.'

Stupidity is failing to see an answer when it is plainly evident. Stupidity is behaving badly when the behaviour is obviously bad. Stupidity is making dumb decisions when the decision should have been recognised as dumb from the start. Stupidity is evidenced by the expression of dull and fallacious ideas and opinions. The obvious question to ask is: 'How stupid are we?' This article will suggest an answer.

But before suggesting an answer, I first need to contextualise thinking. The reason for this is that everybody has their own view of what they do with their thinking. And most people are wrong.

THE PURPOSE OF THINKING

'I think therefore I am'	'I am therefore I think'
René Descartes	Australian Army Officers[3]

Thinking is something we take for granted. After all, we have been 'thinking' for our entire lives. Yet if we ask 'What is the purpose of thinking?', it is actually quite difficult to come up with an answer. I believe that thinking serves three broad and inter-related purposes: sense-making, idea-making and decision-making.

Sense-making is what we do when we process data, information and the inputs from our physical senses. Sense-making involves developing an understanding of 'our' world (as opposed to 'the' world). Sense-making can be broken down into understanding, learning and teaching. These aspects can be broken down further to include such activities as perception, memory, reasoning, communicating, analysis, logic and assimilating. While we have been making sense of our world since we were born, our 'perception' of the world is neither as accurate nor as reliable as we might think.

> Thinking is something we take for granted.

Idea-making is what we do when we seek to understand the context of our environment and generate ideas to inform decisions and action. Idea-making can be broken down into design and creativity. These aspects can be decomposed into such activities as inquiry, systems thinking, idea generation, synthesis and innovation. A broad range of techniques is available to enhance idea-making; but the Army has made little effort (a generous assessment) to institutionalise any of them.[4]

Decision-making is a natural consequence of thinking and leads to the actions we take. Decision-making involves problem solving, decision formulation and planning. These aspects can be broken down into such activities as recognising and diagnosing problems, selecting and applying a decision model, and formulating and executing plans. As with idea-making, there are a broad range of problem-solving and decision-making techniques. With the exception of the Military Appreciation Process (discussed later in this article), the Army has also failed to institutionalise them.[5]

These three 'purposes' describe the application of thinking, but not the demonstration of thinking. Thinking is demonstrated through expressions of thinking.

EXPRESSIONS OF THINKING

The quality of our thinking is expressed through the thoughts we have and the actions we take. The thoughts we have are usually expressed through speaking and writing. These expressions of thinking are judged by the people who listen to us speak or who read what we write. The actions we take are judged by those on whom they have an impact. In the Army, our thoughts are expressed through staff work, written or verbal. Our actions are judged by our subordinates, peers, seniors, partners, allies, enemies and, if we reflect on our experience, by ourselves. The judgments made on our actions are shaped by the perceptions, prejudices and biases of those making the judgments.[6] We also need to consider that thinking occurs at different levels; it is not solely an individual activity.

> We also need to consider that thinking occurs at different levels; it is not solely an individual activity.

LEVELS OF THINKING

Thinking takes place on three levels: individual, team and organisational. **Individual thinking** is what we do independently of others. Individual thinking is shaped by various factors. These include the structure and functioning of our brains, the habits

of thinking we develop, and the culture and expectations of the organisations and groups to which we belong.

Team thinking is the aggregation of individual thinking, but with the added complication of social and cultural interactions within the team. Bruce Tuckman, an American psychologist, is well known for his theory of group development, in which he identified five stages of development.[7] The stages are forming, storming, norming, performing and adjourning. The importance of the stages is that they illustrate the effect and influence on individuals of group (team) development. When working in teams, individuals do not behave (think) as they would if they were acting as individuals.

Organisational thinking results from the aggregation of individual and team thinking and is constrained by the culture, traditions and rules that exist within the organisation. Organisational thinking can be viewed as resulting in direction given to, or influence exerted on, teams and individuals. Here we can make an interesting distinction between rational decision-making and rule following.[8] Rational decision-making (on which the Military Appreciation Process is founded) is based on developing options, selecting the best option according to agreed (objective) criteria, and then implementing the selected option. Rule following, by contrast, requires decision-makers to identify the type of situation they face, to understand their position within the organisation, and to make a decision based on the rules and expectations of the organisation.

Having outlined the three levels on which thinking takes place, we can now turn our attention to some of the reasons why thinking is difficult.

ISSUES WITH THINKING

We humans share many issues with our thinking, and to explain them fully would take many books. For that reason I will only highlight four common issues that, in my experience, have a significant impact on our ability to think.

Perception. Although most of us believe that we perceive things as they actually are, evidence suggests that our perceptions are actually an interpretation by our brains of sensory information.[9]

> What we think is happening may not be the same as what is actually happening.

What we think is real may not be. The world looks, feels, sounds, smells and tastes exactly as our brain *imagines* it to be. In Figure 1, the green surface on the left looks longer and thinner than the green surface on the right, yet they are the same size and shape (but 90 degrees out of alignment—measure them for yourself). Whether we like it or not, our brains play tricks on us.[10]
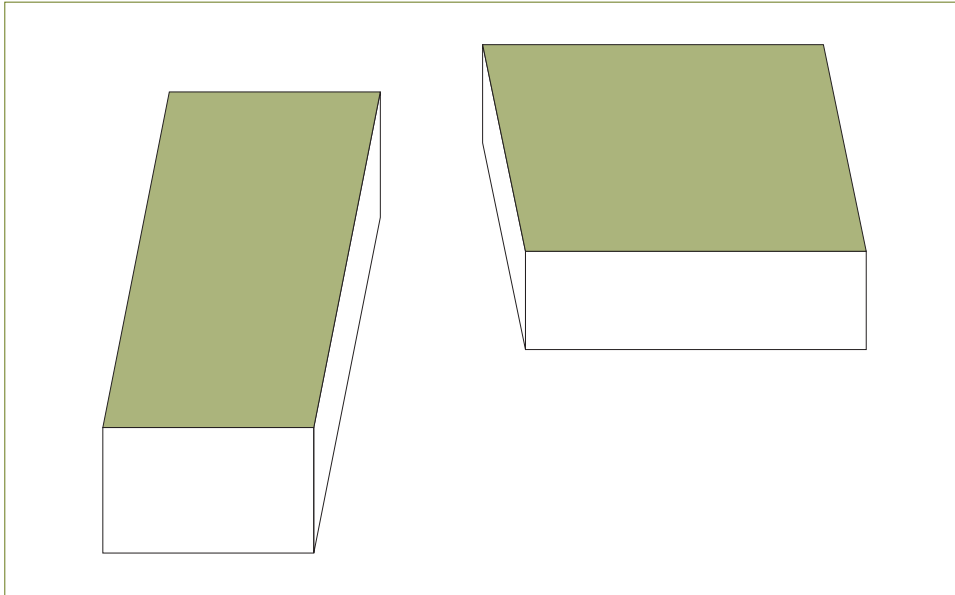
Figure 1. Spatial Perception

Our ability to 'perceive' what is happening around us is further impaired by issues such as 'inattentional blindness' and 'change blindness'. Inattentional blindness is caused by our brain's limited 'awareness' and results in our not noticing significant events taking place in plain view, but outside the focus of our attention.[11] Change blindness is caused by our susceptibility to distraction and results in our not noticing significant changes in a scene we are looking at.[12]

The unreliability of perception means that we need to be careful when interpreting sensory inputs. What we think is happening may not be the same as what is actually happening.

Memory. The commonly held belief that our memory is a vast repository of everything we have experienced—and that we only need to access it to recall what took place—has been proven false.[13] Memory is far less reliable than we might think. Our memory of events is a reconstruction, not a recording.

> … considerable research indicates that our memories can change. We can even create new memories for events that never actually happened! In effect, our memory is not a literal snapshot of events which we later retrieve from our album of past experiences. Instead, memory is constructive. Current beliefs, expectations, environment, and even suggestive questioning can influence our memory of past events. It's more accurate to think of memory as a reconstruction of the past—and with each successive reconstruction, our memories can get further and further from the truth. Memories thus change over time,

even when we're confident that they haven't, and those memories can have a significant influence on the beliefs we form and the decisions we make.[14]

The fallibility of memory has the worrying potential to shape our perceptions, to influence our understanding of events, and to impact on the quality of individual and team decisions.

The challenge for career managers is to stop posting people simply to fill vacant positions and to start planning career pathways that result in the accumulation of relevant memories. The value of qualifications is wasted if the holder is unable to reinforce learning through relevant experience and continuing development. My experience, and I'm confident I'm not alone, is that the qualifications I gained have been largely irrelevant to my career management.[15]

Creativity. Creativity is a critical requirement for adaptation. We need creativity because:

> When things change and new information comes into existence, it's no longer possible to solve current problems with yesterday's solutions. Over and over again, people are finding out that what worked two years ago won't work today. This gives them a choice. They can either bemoan the fact that things aren't as easy as they used to be, or they can use their creative abilities to find new answers, new solutions, and new ideas.[16]

The problem we all face, however, is that creativity is generally conditioned out of us by our system of education and our social and work cultures. Tradition, in particular, has become a yoke around our necks. Tradition is not a valid argument for preserving the past: traditions remain valuable only if they remain relevant. If you want an illustration of the power of tradition to stymie creativity and innovation, try suggesting that we should reduce the amount of drill we do.

> … creativity is generally conditioned out of us by our system of education and our social and work cultures.

> The only thing harder than getting a new idea into the military mind, is getting the old one out.
>
> – B H Liddell Hart

The good news is that, regardless of how 'uncreative' we might feel we have become, we are still capable of producing creative solutions.

> … even if it's not possible to train people to **be** more creative (and I think it is), it is possible to supply them with tools that will allow them to **produce creative solutions** without necessarily **being** creative.[17]

The tools for producing creative solutions are well established and relatively easy to learn. As mentioned previously, the problem that Army currently has is that we fail to incorporate these tools into our decision-making processes. My opinion is that Army's leaders are uncomfortable with the uncertainty of creativity. It is much easier to pursue a safe, dull plan than to try to do something new.

Confirmation bias. None of us is as brilliant or as infallible as we think we are. Confirmation bias leads us to seek out evidence to confirm beliefs we already hold. Either we do not look for dissonant (disconfirming) evidence, or, if we stumble across it, we discount its relevance. This is a major problem in the thinking of individuals.

> Faced with the choice between changing one's mind and proving that there is no need to do so, almost everyone gets busy on the proof.
>
> – John Kenneth Galbraith

Worryingly, there is even evidence that confirmation bias is hard-wired into our brains.

> Neuroscientists have recently shown that these biases in thinking are built into the very way the brain processes information—all brains, regardless of their owners' political affiliation. For example, in a study of people who were being monitored by magnetic resonance imaging (MRI) while they were trying to process dissonant or consonant information about George Bush or John Kerry, Drew Westen and his colleagues found that the reasoning areas of the brain virtually shut down when participants were confronted with dissonant information, and the emotion circuits of the brain lit up happily when consonance was restored. These mechanisms provide a neurological basis for the observation that once our minds are made up, it is hard to change them.[18]

Confirmation bias has a major impact on the quality of our individual and team thinking. It is the main reason we so often miss what in hindsight were obvious flaws in our decisions.

I have so far avoided a direct answer to my earlier question: 'How stupid are we?' The answer, based on the evidence I have seen, is that we are rather stupid. I can imagine you asking, 'Who are the stupid people?' Well, if you want to know who the stupid people are you need only look in a mirror. I have outlined the four problems with thinking which impact directly on all individual thinking. They also affect team thinking through their impact on the individuals who form the team. These problems (and many more) also affect organisational thinking through the aggregation of individual and team effects.

> Confirmation bias has a major impact on the quality of our individual and team thinking.

FACILITATION – NOW THERE'S AN IDEA!

The Army is a team-focused organisation. Teams define who we are and generate the most important components of our capability. Army's leaders, at all rank levels, are excellent at leading.[19] They are inspirational and skilled at eliciting Herculean efforts from team members towards achieving the team's objective. The problem that most teams have with 'thinking', however, is that they do not know how to do it—as a team. Team thinking requires the application of process and technique. This is in contrast to team 'doing', which can be achieved through coordinated effort and following procedure. Team thinking in the Army is hamstrung by a surplus of leadership and a deficiency of facilitation.

This lack of facilitation skills also affects training. While we have excellent instructors—with great technical knowledge and confident manner—the vast majority of them have not been trained to facilitate. Facilitation requires you to help a team (or an individual) to get the most out of an activity. It is hard to do this if you have an 'alpha-type' personality and no practical facilitation skills. A skilled facilitator appreciates the importance of planning an activity and guiding the team in the use of a wide range of appropriate techniques. A skilled facilitator understands that team thinking is a process and not an event.

If the Army is to become adaptive it will need to adopt a more facilitative approach to teamwork.

When I teach brainstorming to groups I start by asking how many people have 'done' brainstorming in the past. Almost everybody raises his or her hand. After I have taught the process of brainstorming, I ask the question again. Typically, less than ten per cent of people then raise their hands. What most of them have done in the past can best be described as 'brain dumping'—the simple dumping of ideas related to the nominated topic. Brainstorming requires preparation and the conduct of a sequenced arrangement of activities to generate ideas, sort the ideas, evaluate the ideas and develop options. The full process of brainstorming can take as long as several months and should incorporate the use of additional techniques such as nominal group technique and affinity diagrams. You can do brainstorming in a much shorter timeframe, but if you think you can complete it within half an hour, you're deluded. If your entire experience of brainstorming has been confined to sitting down for 15–20 minutes with three or four colleagues in a small room, with a whiteboard and a couple of markers, then you have actually never experienced brainstorming. And that is indicative of the difference between leadership and facilitation. A leader will lead a team to his or her decision. A facilitator will help the team to find better decisions for themselves.

If the Army is to become adaptive it will need to adopt a more facilitative approach to teamwork. This will provide a challenge to Army's leaders who, based on their experience, will probably think that they can do the job just fine without the need to change their successful, directive style of leadership.

THE PROBLEM WITH THE MILITARY APPRECIATION PROCESS

If the only tool you have is a hammer, you tend to see every problem as a nail.

– Abraham Maslow (1908–1970)

The Military Appreciation Process (MAP) is the only decision-making framework we have in the Army. It is based on the rational decision-making model, but is often applied more as a planning tool than a decision-making framework. A significant problem is that the majority of people using the MAP lack a deeper knowledge and understanding of how 'thinking' takes place. They are unaware of the limitations we all have when trying to make sense of our environment. They are also unaware of the problems we all face when trying to make decisions. Because they lack self-awareness, they are therefore compelled to apply the MAP as a linear process, without fully understanding the implications of our limited ability to think. Even those who are experienced in the use of the MAP may simply be applying the process in a more efficient way by varying the application of the doctrine to suit different situations. They are working the 'process' smarter, but not necessarily making smarter decisions.

An even more significant problem, and one which pretty much invalidates the quote I chose to open this section, is that most people in the Army do not even use the MAP to guide everyday decision-making. Of course, when you ask them if they use it they will say that they do; but scratch the surface of their response and you will see how shallow it is. They skimp on the Intelligence Preparation and Monitoring of the Battlespace, shortcut the Mission Analysis and leap straight in to developing a favoured (i.e. 'I've done it before and it worked then') course of action. Then, a year or two after implementation, as the detailed plan of action stumbles over unintended consequences, we find that the person who chose it has been posted out and fails to learn from the experience. Perhaps I should replace the Maslow quote with one (less elegant) of my own:

If the only tool you have is a hammer, and you choose not to use it, then either you recognise the need for additional tools or you are stupid.

– Richard King

When the Australian Military Appreciation Process (MAP) doctrine was first published in 1996[20] it was 181 pages long. Five years later, on schedule, the doctrine was rewritten,[21] but now it was 292 pages long. Eight years later, a new version is due to be released in October 2009, as developing doctrine: the current draft is 592 pages long. I am not entirely convinced that the added length will either make the MAP any more useful or encourage its use. Also worrying is that the rewritten MAP will still lack a decent range of tools to improve its application.

Let me digress briefly, and suggest an insight into the management and use of doctrine by Army. If the Army is to become adaptive it will have to change the way it thinks about doctrine. The best we can achieve with doctrine is to 'habitualise' what we thought we had to do at a time in the past when we wrote the doctrine. Doctrine that takes years to review, produce and validate is out of date and representative of an outdated paradigm. All doctrine should be 'developing doctrine', and subject to continuous review and improvement. Currently, doctrine entrenches what we *did* do. We can only become adaptive if we encourage a focus on what we *could* do; but that would require creativity and innovation.

SOME EVIDENCE OF SUB-OPTIMAL THINKING

Up to now, I have provided my judgment[22] on why it is difficult to think. It is probably time to provide some evidence of sub-optimal thinking.

My office windows. On 28 July 2009, I was away from my office for the day. When I opened the door the next day, something did not look right. I discovered that of the six windows in my office which could be opened, two had been fitted with window locks (which were locked, and for which I did not have a key) and the remaining four had been riveted closed. I had not known this was scheduled to be done, and neither had anyone else I spoke to in the building. Still, I comforted myself, the work must have been done for a good reason. And so what if our building lacks the amenity of air-conditioning and, by all accounts, becomes uncomfortably hot in summer; at least my windows wouldn't accidentally open.

Two weeks after my windows were sealed, the same worker (I had not met him when he sealed the windows, but he said he was the same person) came back to unlock the window locks and drill out all the rivets he had fitted previously. He worked for a contractor and did not know why the decision was made to seal the windows originally, or unseal them two weeks later. He was being paid so he was happy.

Now, noting that it is a requirement to report on adaptive traits or contributions towards the Strategic Reform Program, I have a suggestion. If Defence would like to improve its chances of saving 20 billion dollars over the next ten years, it could start by making less stupid decisions, such as sealing the windows in a non-air-conditioned building.

Writings on the Adaptive Army. Calling the Army adaptive does not make it adaptive. A change in title—even accompanied by a change in organisational structure—does not change habit, culture or tradition. Furthermore, explaining how we are going to become an Adaptive Army in documents that are poorly written—from a critical thinking perspective—may be counterproductive.

I visited the 'Adaptive Army' webpage and analysed the introductory text and the explanations of the five initiatives. To do this I used the 'grammar' tool in Microsoft Word to show the readability statistics for each piece of text. The results were uninspiring. The statistics are shown below:

> Calling the Army adaptive does not make it adaptive.

Grammar Tool Statistics for Adaptive Army Homepage

Criterion	Intro-duction	Rebalance C2 & Army Structure	Personnel Initiatives	Improved Training & Education	Materiel Manage-ment	Army Knowledge Management
Total words	385	1170	502	685	615	424
Sentences per paragraph	3.2	3.8	6.6	4	3.8	2.6
Words per sentence	24.0	21.5	25.1	16.1	32.3	19.6
Passive sentences	12%	22%	20%	22%	26%	23%
Flesch Reading Ease	19.1	21.4	22.3	26.2	19.7	22.2
Flesch-Kincaid Grade Level	16.5	15.5	15.8	13.6	18.5	15.0

Interestingly, the best-written section (Improved Training & Education) still requires the reader to be at least partly university educated in order to understand what is written. The writing shows a lack of appreciation for the intended audience, unless it is written only for those in Army with a university education. This provides further evidence in support of Colonel John Hutcheson's statement in the last edition of the

Australian Army Journal: 'I have found that the majority of officers can verbalise their ideas, but have great difficulty in expressing those same ideas on paper.'[23] I would go further. I believe that the majority of officers are confident and competent speakers, but that their speaking skills mask an underlying problem with thinking. This can result in officers expressing forceful, persuasive, but dull opinions and ideas that are given greater credibility than they deserve if analysed from a critical thinking perspective.

Further evidence of the difficulty people have in expressing ideas in writing is found in CA Directive 14/09, Implementing the Adaptive Army in 2009 – AL1. Consider paragraph 9 from that directive:

> *Adaptive Army* is founded on the principle that although Army's hierarchical structure remains crucial to our culture, the right application of modern technology can empower individuals and the chain of command through higher levels of personal responsibility and communication. Adaptation at its heart balances the need to change as the situation evolves with a requirement to retain important corporate knowledge.

Before commenting on this from a 'thinking' perspective, I acknowledge that any analysis of an extract in isolation from the whole document carries the risk of missing important context. My comments on this paragraph can be summed up as: it fails to show much evidence of critical thinking. Specifically:

a. It confuses 'principle' with 'assumption'. Army's hierarchical structure is a cultural inheritance. A hierarchical structure has historically proven effective for command and control. It contributes to tactical, operational and strategic success when armies are large, ponderous and complicated. In a non-operational environment, however, or a lower-level and more-complex type of operation, a flatter (less hierarchical) structure would be more adaptive and would encourage greater creativity. It is an assumption that 'Army's hierarchical structure remains crucial to our culture', and one that should be challenged.

b. It misrepresents the meaning of 'empower-ment'. The notion that 'the right application of modern technology can empower indi-viduals and the chain of command through higher levels of personal responsibility and communication' is another assumption. Technology cannot empower individuals and the chain of command. Empowerment requires that individuals (and organi-sations) have devolved to them the right combination of responsibility, authority to act, and the resources to complete the job. This is a cultural issue, not a matter of technology. Army has traditionally been strong on devolving responsibility but weak on devolving authority.[24] A culture of mission command should be

> Army has traditionally been strong on devolving responsibility but weak on devolving authority.

at the heart of achieving an Adaptive Army, and yet 'mission command' is not mentioned in the Directive.[25]

c. If we ignore the suspect use of 'empowerment', it still does not make much sense. How will 'the right application of modern technology' achieve anything through 'higher levels of personal responsibility and communication'? Most people already have adequate levels of personal responsibility and are in almost constant communication with anybody with a computer terminal and a telephone. Has issuing Blackberries to senior officers really empowered them? As Robert Townsend writes in his book, *Up The Organization*, 'Make sure your present report system is reasonably clean and effective before you automate. Otherwise your new computer will just speed up the mess.'[26]

d. It exhibits poor critical thinking. 'Adaptation at its heart balances the need to change as the situation evolves with a requirement to retain important corporate knowledge.' The use of the word 'balances' implies a direct relationship between 'the need to change' and the retention of 'important corporate knowledge'. While this links nicely into the next paragraph in the CA Directive, it is evidence of sub-optimal thinking. Adaptation is about recognising the need to change, and then having the will and the means to change. Corporate knowledge resides in the heads of people; not in a database on a computer. Change will always require 'change'. The problem with corporate knowledge is that it needs to be developed, built and applied. Every time you post someone to another (different) part of the Army their corporate knowledge walks out of the door with them. The Chief of Army's intent is that 'The Army must continually review and adapt to ensure that it remains fit for the changing environment'. Adaptation means changing. This sentence would have made more sense if it stated: Adaptation at its heart recognises the need to change as the situation evolves and the challenges this poses to the development and management of corporate knowledge.

While my issues with office windows and the quality of writing relating to the Adaptive Army initiative probably seem like scant evidence of poor thinking in Army, they are merely symptomatic. We have a long history of making stupid decisions with the best of intentions. For those interested in revisiting some of that history I highly recommend reading the book *Reglomania*.[27]

CONCLUSION

So, is the Army stupid? I believe it is. That does not mean, however, that everybody in the Army is stupid, or that everything the Army does is stupid. My assessment is that we are stupid as individuals because we do not understand 'thinking'. We do not appreciate how many problems we face in trying to make smart decisions. Increased self-awareness through education and training is part of the solution for

individuals. Through deliberate effort, individuals can learn to raise the recognition threshold for stupid ideas.

Teams face additional problems resulting from Army's culture. Tradition and rank hamper the development and free exchange of ideas.[28] A focus on leadership instead of facilitation prevents teams from reaching their true potential. Facilitation skills are an essential 'adaptive' skill, but if Army decides to 'up skill' its people in this area we are starting from a very low base.

Organisationally we need to put more effort into thinking. This will not, however, slow down the process of adaptation. It may actually speed things up if we make fewer decisions that are eventually found to be stupid and which result in consider-able rework. Here we face another cultural problem: Army's culture is fixated on achieving 'end-states' (completing things) when we should be focused on monitoring 'achievement'. The Army focuses too much on delivering outputs and too little on achieving outcomes.

> Increased self-awareness through education and training is part of the solution for individuals.

Ultimately, it will be very hard to become less stupid if we do not recognise the value of critical and creative thinking skills and facilitation skills, and establish a robust system to develop, recognise and reward those skills. Those of you uncomfortable with the thought that we might be stupid can console yourselves with the fact that, as you read this, critical thinking skills are neither a desirable nor a mandatory requirement. The rest of you might think that the time has come when they should be.

ENDNOTES

1   This article summarises some key conclusions drawn from a decade of experience in the development of thinking skills.
2   Quote by a career manager from the Directorate Officer Career Management – Army.
3   This applies equally to just about anybody. I am highlighting Army officers to make a point.
4   Some of the idea generating techniques ignored by the Army are covered in the following: Edward De Bono, *Serious Creativity*, Fontana, London, 1992; Michael Michalko, *Thinkertoys – A handbook of creative-thinking techniques*, Second Edition, Ten Speed Press, Berkeley, 2006; Arthur B VanGundy, *Idea Power – Techniques & Resources to Unleash the Creativity in Your Organization*, AMACOM, New York, 1992.
5   For an overview of some of the problem-solving and decision-making techniques ignored by the Army I recommend the following two books: William J Altier, *The Thinking Manager's Toolbox – Effective Processes for Problem Solving & Decision*

Making, Oxford University Press, Oxford, 1999; Morgan D Jones, *The Thinker's Toolkit – 14 Powerful Techniques for Problem Solving*, Three Rivers Press, New York, 1998.

6   If the Army wishes to improve the quality of performance reporting on personnel then some form of 360 degree reporting will be required. Our superiors only have a myopic view of the outcomes of our thinking.

7   Robert P Vecchio, Greg Hearn and Greg Southey, *Organisational Behaviour – Life at Work in Australia*, Harcourt Brace & Company, Sydney, 1995, pp. 381–83.

8   James G March, with the assistance of Chip Heath, *A Primer on Decision Making – How Decisions Happen*, The Free Press, New York, 1994, pp. 1–3, 57–61.

9   Atul Gawande, 'The Itch', *The New Yorker*, 30 June 2008, <http://www.newyorker.com/reporting/2008/06/30/080630fa_fact_gawande/> accessed 27 August 2009.

10 Graham Lawton, 'Mind tricks: Six ways to explore your brain', *The New Scientist*, 19 September 2007, <http://www.newscientist.com/article/mg19526221.300-mind-tricks-six-ways-to-explore-your-brain.html?full=true> accessed 26 August 2009.

11 Michael Shermer, 'None So Blind', *Scientific American Magazine*, March 2004, <http://www.scientificamerican.com/article.cfm?id=none-so-blind> accessed 8 September 2009.

12 J Kevin O'Regan, 'Change Blindness', *Encyclopedia of Cognitive Science*, <http://nivea.psycho.univ-paris5.fr/ECS/ECS-CB.html> accessed 8 September 2009.

13 If you want more evidence of how unreliable our memories are, then I recommend reading the following: Gary Marcus, *Kluge: The haphazard construction of the human mind*, Houghton Mifflin Company, New York, 2008, Chapters 2 and 3; Robert A Burton, *On Being Certain: Believing You Are Right Even When You're Not*, St Martin's Press, New York, 2008, Chapters 2 and 8; Carol Tavris and Elliot Aronson, *Mistakes Were Made (but not by me): Why We Justify Foolish Beliefs, Bad Decision, and Hurtful Acts*, Harcourt Inc., Orlando, 2007, Chapter 3; Daniel L Schacter, *The Seven Sins of Memory*, quoted in <http://brothersjudd.com/index.cfm/fuseaction/reviews.detail/book_id/251/Seven%20Sins%20o.htm> accessed 17 April 2009.

14 Thomas Kida, *Don't Believe Everything You Think: The 6 Basic Mistakes We Make in Thinking*, Prometheus Books, New York, 2006, p. 22.

15 In 1988 I majored in industrial relations but was never employed in personnel management; the qualification is now virtually worthless, although some fragments of information remain in my memory.

16 Roger von Oech, *A Whack on the Side of the Head: How You Can Be More Creative*, Warner Books, New York, 1998, p. 5.

17 Roni Horowitz, *Introduction to ASIT*, published as an ebook by Start2Think, 2003, p. 4.

18 Tavris and Aronson, *Mistakes Were Made (but not by me)*, p. 19.

19 For those interested in 'argument', I am providing an example of inductive reasoning: generalising from a number of observations. Inductive arguments are not 'valid', only more or less probable. For a fuller explanation see: Nigel Warburton, *Thinking from A to Z – Third Edition*, Routledge, London, 2007, pp. 85–86.

20 Australian Army Training Information Bulletin, Number 74, *The Military Appreciation Process*, Department of Defence, 18 December 1996.

21 Australian Army Land Warfare Doctrine, LWD 5-1-4, *The Military Appreciation Process*, Department of Defence, 2001.

22 I hope that the reader will give me some credit for eleven years of work in this area, and assess my arguments as reasoned judgment rather than mere opinion.

23 Colonel John Hutcheson, 'The Adaptive Officer: Think, Communicate and Influence', *Australian Army Journal*, Vol. VI, No. 2, 2009, p. 10.

24 I am commenting from a 'staff' perspective here, rather than an operational one.

25 Mission command was one of three focus themes in the Chief of Army's Exercise in 2006. The proceedings from that exercise concluded: 'Overwhelmingly, the feedback from syndicates highlights that a significant amount of work remains to convey the vision of mission command throughout the organisation.' Scott Hopkins (ed.), *Chief of Army's Exercise Proceedings*, Land Warfare Studies Centre, Canberra, 2007, p. 127.

26 Robert Townsend, *Up The Organization – How to stop the company stifling people and strangling profits*, Coronet Books, Hodder-Fawcett Ltd, London, 1971, p. 34.

27 Roy Gilbert, *Reglomania: The curse of organisational reform and how to cure it*, Prentice Hall, Melbourne, 1991, pp. 30–31. Those with long corporate memories will remember warmly the era of paying a premium to have air conditioners and radios removed from cars because the intended users were not entitled to them. Likewise, paying for the modification of existing plans for married quarters, to remove ensuite bathrooms because the intended occupants had no entitlement—only to pay even more to have ensuite bathrooms added to the houses when the standards changed.

28 A simple and effective tip for leaders when working with a team is to ask the most junior members of the team to share their ideas and opinions first. If the boss speaks first, most of their subordinates will find it hard to disagree.

THE AUTHOR

Lieutenant Colonel Richard King is an Ordnance Corps officer and is currently the SO1 Thinking Skills Projects in Headquarters Forces Command. He worked in the private sector from 1998 to 2003 and has been researching and teaching 'thinking skills' since 1998. He is a graduate of the Royal Thai Army Command and Staff College and holds a Master of Management Studies (in Economics). Lieutenant Colonel King is the desk officer for the 'Towards a "Smarter" Army' initiative.

Hugo Slim, *Killing Civilians: Method, Madness and Morality in War,* Columbia University Press, New York, 2008, 319pp.

Reviewed by Dr Narelle Biedermann

Hugo Slim is a writer and scholar with a significant background in humanitarian operations. He could have easily chosen to take a preaching, moralistic stance in putting this book together. Instead, *Killing Civilians* is a remarkable piece of literature that approaches a unique, yet vitally important element of warfare and international violence from a realistic and pragmatic standpoint. Using accessible language and historical examples, Slim juxtaposes human psychology and history in a clever and engaging way. The book is replete with exemplars of murder and torture of civilians—non-combatants—from wars around the world that serves to reinforce man's inhumanity to man.

The book is divided into four very apt and neatly compartmentalised sections. Part one explores the principles and complexities of civilians in war throughout history. Using historical examples from wars in Europe and Asia through to conventional policies overriding most wars in contemporary Africa, Slim highlights that protecting civilians or excluding them from involvement in war is impossible and that even with best intent, civilian casualties of some kind are inevitable.

Part two is divided into two chapters that set out to describe the seven spheres of civilian suffering: killing, injury and rape; and movement, impoverishment, famine, disease and distress. There are some particularly confronting historical and contemporary examples, but it is an important component that examines the many ways in which civilians suffer and how much of this suffering is a deliberate part of the strategy or cruelty of war.

Part three analyses why civilian suffering happens, exploring anti-civilian ideologies, the ambiguities of 'civilian' status, and the act of killing. Slim begins this part with a statement that 'people do not kill civilians mindlessly', and goes on to describe the most extreme form of anti-civilian ideology—genocide—as a mindful act in which civilians are not identified as 'civilians'. Instead it sees whole groups of people

whose eradication serves an outright political end. The three chapters that constitute part three serve to illustrate that the act of killing and inflicting human suffering is often a carefully orchestrated human endeavour.

Part four sets out to provide some small amount of realism with which to promote civilian protection. Simply repeating that civilian suffering is illegal and wrong, as many human rights groups tend to do, will do little to change potential perpetrators, he says. Appeals should rather be made to their self-interest, sense of fairness, even to old-fashioned virtues like mercy and honour. But with an almost perceptible shrug, Slim acknowledges that this probably will not work either.

One of the major challenges in protecting civilians from harm, suffering, violence and death is the difficulty in clearly defining who or what is a civilian. At first glance, this should seem easy. Certain members of any group of people—women, children, unarmed men, elderly, medical and religious professionals—could be described as fitting any loose categorisation of civilian, but in many cases throughout history, this has been proven incorrect. The Geneva Conventions, for example, provide a limited definition by suggesting what civilians are not; they are not members of an armed force, ergo they are civilians. Yet, history—and contemporary operations—tells us that this is simply not true. The line grows fuzzier the deeper one explores this complex issue.

What is particularly refreshing in Slim's approach to this body of work is that he is clearly a realist. He isn't writing an idealistic or naïve version of death and suffering of 'innocent' civilians that can be reversed through some enforced hand-holding and conversations over a negotiation table. He unapologetically presents the ambiguities that are associated with warfare, human behaviour, the presence of civilians and limiting violence. He also outlines the complexities of what we in the Western world call radical ideologies. As Slim himself concedes, there are rarely totally innocent bystanders in wartime. In 2002, Osama bin Laden announced that every citizen of any democracy that participates in war is 'non-innocent' (p. 198)—and is therefore a legitimate target—because their political systems allow them to choose their leaders and thus, to choose their wars.

This is a fine book that must make an important contribution to military thinking and should get the attention it rightly deserves. Slim notes in his epilogue that this book may serve to help people to 'recognise the ideologies that drive deliberate civilian suffering so that they can anticipate them, undermine their logic and act against them in the wars that are to come'. For this reason, this book should be essential reading for senior commanders, operational planners, specialists, and unit-level soldiers and officers.

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BOOK REVIEW

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Mark Johnston, *The Proud 6th: An illustrated history of the 6th Australian Division, 1939-45,* Cambridge University Press, Port Melbourne, 2008, 269pp.

Reviewed by Phil Bradley

There is a wonderful tradition in Australia to write battalion histories and, as a result, very few divisional or brigade level histories have been written. This can make it very difficult to follow the history of Australian divisions in the two World Wars, particularly in the Second World War, where the divisions were often split up. With his third illustrated divisional history, Mark Johnston shows the value that such histories represent. *The Proud 6th* follows his earlier books on the *Magnificent 9th* and *Silent 7th* divisions.

The 6th was the first division raised for the second AIF and, for men brought up on the stories of the valour of the first AIF, the battle for Bardia, where the 16th and 17th Brigades were employed, confirmed that the latest crop was as good as the first. By achieving such a resounding victory in its first action of the war, the division set high expectations both for itself and for the rest of the second AIF for the entire war. With its spurs in place, two of the brigades went on to serve at Tobruk before the entire division was sent to Greece and, much of it, to Crete. As Johnston points out in a well-researched Appendix I, the 6th Division lost over 5000 men captured in Greece and Crete—almost as many men as the division had killed and wounded during the entire war. After a period in Syria and Ceylon, the division returned to Australia in August 1942 and the 16th Brigade was immediately sent to New Guinea to push the Japanese back along the Kokoda Trail to the coast. When the 17th Brigade followed, it flew into Wau to hold and then drive the Japanese back towards Salamaua. When the tide of the war in New Guinea needed to be turned, it was these two 6th Division brigades that did it. The division later went on to fight in the final Aitape-Wewak campaign.

Though Johnston is not a veteran, he has always reflected the veteran's war experiences in his writing, and the same applies here. With the number of living veterans,

particularly from the Middle-East campaigns getting fewer and fewer, Johnston has still managed to trawl up many of their diaries and photos to illuminate his book. Some of these gems have come from the families of veterans and perhaps this book will encourage more families to contact Mark. You will never see many of the photos he presents here anywhere else and certainly not the final one, which gives the reader the strongest indication of what it must have been like to have served with such men. Being so well illustrated and partitioned into caption related text, the book is very easy to read and reference. Though it is not intended to be a concise history, it is an excellent overview and, for most readers, that is an ideal balance. Those looking for more detail can go to the battalion and official histories as noted in the bibliography.

Johnston notes in Appendix II how difficult it was to receive decorations in the 6th Division; it was not until the final campaign in 1945 that Bert Chowne and Ted Kenna were awarded the Victoria Cross. In an interview with the official historian in July 1944, General Savige postulated that no VCs had been awarded within the division up to that time because 'the exceptional leader did not stand out above the general level'. One wonders how much higher the recognition of the division would have been if men of the calibre of Bill Sherlock or 'Bull' Allen had been awarded the VCs they deserved. In this book Johnston recognises that Australia has much to be proud of with the 6th Division.

BOOK REVIEW

Geoff Plunkett, *Chemical Warfare in Australia: Australia's Involvement in Chemical Warfare 1914-1945*, Australian Military History Publications, Canberra, 2007, 734pp.

Reviewed by John Donovan

Somewhere in these 734 pages there is an interesting book (about 300 pages long) struggling to be found. Unfortunately, it is so buried by repetition and lack of focus that only the most determined are likely to plough their way through to the end.

The principal cause of the lack of focus seems to be that the author attempted to fulfil the spirit of his title, when his real interest seems actually to be the experiences of the RAAF chemical warfare armourers during the Second World War. However, even within that narrower focus, there is too much repetition. For example, similar descriptions of the daily work of those armourers were often provided by several of them.

Such limited reference as there is to the First World War is largely contained in the first chapter, which includes the reminiscences of some armourers about gassed First World War soldiers they knew while they were growing up, and an appendix (the last of 18) that briefly covers some incidents during the war, the post-war effects on three individuals, the effects on animals, and some chemical warfare proposals submitted by the public during the war.

The focus on the RAAF experience is demonstrated by the different treatment of the trials conducted in Australia. The experimental stations and the Brook Island trials of air delivery in Queensland, where there was significant RAAF involvement, are covered in the main text. However, most of the 25-pounder trials, which principally involved Army personnel, are covered in an appendix.

Once Plunkett gets to his main interest, however, the story is comprehensive. There is much that will (or certainly should) cause eyebrows to rise. The idea of walking into to a mustard gas store and detecting the presence of leaking containers by sniffing for a garlic smell, or entering a phosgene store with a hand pumped spray

full of ammonia solution looking for a reaction on the sprayed ammonia to detect leakers there, is the stuff of nightmares.

So, too, are the many photos of casually dressed armourers sitting on containers of mustard, or (with the addition of gas masks) venting unwanted phosgene after the war by shooting holes in the containers. Burning large stocks of mustard in open areas after the war might have been effective, but even in the rush to demobilise there must surely have been some senior personnel who questioned such an approach. At least with sea dumping there was reasonable prospect that leakages would react with seawater to produce safer by-products.

Disposal was not comprehensive, as some areas later had to be decontaminated, and at least one individual died around 1960, when he found a drum of mustard in the Adelaide Rover area and rubbed onto his skin, having mistaken it for liniment.

What is clear in this book is that preparations were made, starting between the wars, for Australia to use chemical warfare. However, this use would only have been in response to enemy (principally Japanese, as far as Australia was concerned) first use. Plunkett suggests that Macarthur, who had experienced gas during the First World War, might even then have refused to authorise its use. However, the preparations were comprehensive, training was conducted, and the stocks of chemical weapons held were significant.

The book sheds some light on little known incidents during the war. The reluctance of some wharf labourers to handle ammunition ships, for example, might have been increased by the fear of mixed loads, when at least one wharfie died after mustard contamination. The bureaucratic use of euphemisms is also prominent. 'Smoke Curtain Installations' (for aircraft) sound so much less threatening than mustard gas spray tanks! Perhaps this title even deluded enemy intelligence.

The casual attitude of many of the RAAF armourers (who were not specifically volunteers for chemical warfare duties, but 'detailed' to that speciality) to the material they handled has already been mentioned. The limited supervision provided of their work is rather surprising. For example, junior non-commissioned officers supervised long distance movements, while a leading aircraftman organised the clean up after a fully loaded Smoke Curtain Installation dropped off an aircraft taking off at Cairns, spreading mustard along the edge of the runway. Their authority on these occasions seemed to come more from the fear induced by them telling higher authority exactly what they were handling than their actual rank.

The extremely basic facilities provided for maintenance of chemical filled weapons are described fully. While ventilation was obviously important, the open sheds provided often gave limited protection from the elements, leaving work that surely demanded some care to be conducted in less than ideal conditions. For the gourmets among readers, the thought that the disused railway tunnel at Glenbrook reverted after the war to its previous use as a mushroom farm might put a sharp taste on the tongue!

On the (darkly) humorous side, some Queensland farmers had to be warned not to steal drums of mustard, which they apparently hoped would contain something useful as tractor fuel. Also, a stationmaster who declined to provide an engine for a trainload of chemicals stuck in the middle of Rockhampton had to be 'encouraged' by the police to provide one. Another trainload of chemicals was delayed at the main platform at Townsville, until the corporal in charge gave the stationmaster a letter informing him of the contents of the load. This letter rapidly increased the priority for movement of that particular train!

Despite its deficiencies, this book tells an important story, to those with the perseverance to find it.

Peter Ewer, *Forgotten ANZACS: The Campaign in Greece, 1941,*
Scribe Publications, Carlton North, 2008, 419pp.

Reviewed by Glyn Harper

This book deals with the dispatch of W Force to Greece in the early months of 1941 and its ultimate fate. Consisting primarily of the Australian 6th Division fresh from its triumphs in North Africa and the 2nd New Zealand Division, W Force was a token military commitment made by the British Government even though they knew it had little chance of success. However, the British Government had issued a guarantee to protect Greek sovereignty in 1940 and such a commitment, even one as small as W Force, could produce considerable benefits, or so the British Government thought. First, it was intended to show British resolve in a moral cause of protecting small, vulnerable nations. Such resolve would impress the United States and could lead to the forming of a Balkan front against the Germans and could even lead to Turkey entering the war. Such forlorn hopes soon evaporated before the might of a German war machine which committed some 27 Divisions and over 1000 Axis aircraft to its invasion of Greece. The Greek campaign became one long, hazardous withdrawal for W Force. Eventually two Gallipoli style evacuations from the mainland of Greece and from the island of Crete would become necessary. Unfortunately though, not all the ANZAC soldiers who took part could be rescued and thousands had to be left behind, with most left facing long years of captivity ahead of them.

Peter Ewer is a senior official in the Victorian Department of Justice and holds a doctorate in technology and culture from RMIT. This is his first book. In *Forgotten ANZACS* Ewer seeks to tell the full story of the campaigns in Greece and Crete in 1941 but primarily from an ANZAC perspective. And while there is much to like about this account of the Greek campaign, Ewer is only partially successful in achieving his aim.

It is thoroughly laudable that Ewer recognises that there were two nations involved in this ANZAC debacle but the treatment of the New Zealand involvement in this campaign is relatively superficial. Ewer has only looked at three files on the

Greek campaign in the New Zealand National Archives, something it would take a researcher armed with a digital camera less than an hour to do. None of the New Zealand unit and formation war diaries have been used, nor has the voluminous correspondence of the official historian of the campaign been consulted either. Ewer's secondary sources were primarily the two New Zealand official histories as well as the various unit histories. Recent biographies of the two key New Zealand commanders Freyberg and Kippenberger have been ignored, as have the recent New Zealand publications on the campaign. Ian McGibbon's scholarly overview of New Zealand at war published in 2005 has been ignored too.

This leads to some rather distorted and almost condescending views of the New Zealand performances in both Greece and Crete. Based on the evidence, as outlined in these recent publications, it is now generally accepted that the New Zealand 21 Battalion performed poorly at Pinios Gorge in Greece with its commander issuing his final order: 'Head for the hills. It's every man for himself.' It is also generally accepted that Crete was lost to the allies primarily because of a sequence of serious New Zealand command failures at all levels of command. None of these failures are recorded in *Forgotten ANZACS*.

Ewer is on firmer ground in dealing with the Australian involvement and he is also comfortable criticising Generals Wilson and Blamey for their poor perform-ances. Blamey's early departure from the campaign and his insistence on taking his son with him was inexcusable. Ewer's assessment that Blamey's haste to comply with 'the most incomprehensible order of the whole campaign' was 'unseemly' is spot on. The attention Ewer gives to what was happening on 'the other side of the hill'—that is, to German plans and how they unfolded, is also a welcome feature in *Forgotten ANZACS*. Another considerable strength of Ewer's book is his use of oral sources. Ewer has interviewed thirty-three veterans of the campaign on both sides of the Tasman and these recollections have been skilfully woven into the narrative. They make the events of the campaign come alive.

This book is a valuable addition to the history of a campaign that is often over-looked on both sides of the Tasman. Anyone with an interest in what happened in Greece and Crete in 1941 or in what ANZAC combat veterans experienced in the early years of the Second World War should read it. It is a great pity, however, that Ewer's cursory use of New Zealand sources prevents him from achieving the truly ANZAC perspective he was attempting to achieve.

BOOK REVIEW

Garth Pratten, *Australian Battalion Commanders in the Second World War,* Cambridge University Press, Port Melbourne, 2009, 435pp.

Reviewed by Craig Stockings

Despite its rather uninspiring title, and the fact that it began life as a PhD thesis—and at times reads as such—Garth Pratten's book: *Australian Battalion Commanders in the Second World War* is an important contribution in an under-represented area of Australian military historiography. Over the decades the acolytes of Charles Bean have done a comprehensive job at idolising the heroic deed and sacrifice of Australian 'diggers' at war. So too, a healthy tradition of military biography has ensured that our generals have had their time in the sun. But what of that vital link in between? What about the 'Old Man'? What about the commanding officers that ran the war at a unit level? It is at this historical 'gap' that Pratten's book is aimed—and where it squarely hits its target. Key issues such as the background, role, influence and conduct of Australian COs are all examined in this book—most for the first time.

In its overall form, style and subject matter Pratten's work is unique. In a field too often clogged with repetitive narratives and 'ripping yarns', Pratten's analytical approach to the issue of unit command in the Second World War is refreshing. So, too, his willingness to move past commemoration or hero worship of the deeds of past servicemen into the realm of real critique and judgment, is a healthy contribution. Alongside accounts of successful command relationships and decision-making at a unit level, he is unafraid to call poor leadership by its true name—and describe its consequences. Pratten does not pull his punches. This is not a popular or dominant tradition within Australian military history but it is a key strength of his book.

The second factor which sets Pratten's work apart, and which should earn it a place on military reading lists and on the bookshelf of anyone interested in military history rather than military myth, is the breadth and scope of the research which underpins it. Pratten's judgments of various commanders, command institutions, practices and performances are based on a balanced reading (and understanding)

of a wide range of sources. His personal opinions surely shine through—but they are opinions based on careful analysis, not private fancy. His arguments are logical and insightful. His points are well made. The rather scathing appraisals of unit commanders in 8 Division during the Malayan Campaign, or the (in)actions of certain commanders a little earlier in North Africa and Greece are cases in point in this regard. So, too, his careful statistical arguments that demonstrate that Australian COs during this conflict were not necessarily the democratic, representative cross-section of Australian society that ANZAC imagery might have us believe.

Given the numbers of Australian COs that fought, the wide variations in combat circumstances for Australian infantry units in battle from 1941–45, and the enormous variations in character and leadership styles on display, it is no small achievement to have put together a coherent work on the issue of battalion 'command' in the Second World War. Pratten, however, has succeeded—and with considerable aplomb.

Those with a passion for military history—I recommend you buy this book. Those more comfortable with new versions of the same old ANZAC fables, however, may perhaps be better served sticking to the bestsellers.

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BOOK REVIEW

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James S Corum, *Bad Strategies: How Major Powers Fail in Counterinsurgency*, Zenith Press, Minneapolis, 2008, 304pp.

Reviewed by Campbell Micallef

Due to the ongoing conflicts in Afghanistan and Iraq, the number of books written on the subject of COIN is matched only by the myriad of 'experts', whose emergence suggests that there exists a desire to isolate a strategic algorithm, or a 'silver bullet' methodology for success. This is understandable, considering recent Coalition military adaptation to what is often referred to as a 'new way of war'. In fact, as James S Corum posits in *Bad Strategies: How Major Powers Fail in Counterinsurgency*, COIN represents 'a fundamentally different kind of war from conventional war between states' in terms of both complexity and the enemy's centre of gravity. Yet, refreshingly *Bad Strategies* neither sets out to highlight the 'alien' nature of COIN nor does it propose any new model to operate in such an environment. Rather, Corum's approach takes aim at major power grand strategy and failure, resulting from unrealistic, unrelenting and ultimately flawed policies in occupied lands. As Corum states, we can often learn more from failure than we ever can from success.

As history has repeatedly shown, insurgency constitutes a violent response to either real or perceived notions of occupation. Whether due to cultural detachment, religious zeal, economic disparity or nationalism, major powers share the common experience of defending their claimed territory, not only from external attack but from the people whom lie within. Thus in turn, counterinsurgency represents a comprehensive response to an internal strategic dilemma. In the four case studies covered in this book—the French in Algeria, the British in Cyprus, and the United States in Vietnam and Iraq—similar stories of failure in this exercise are analysed.

If there is a specific reason to recommend *Bad Strategies,* it is Corum's sophisticated examination of the all-too-often simplified nexus between counterinsurgency and grand strategy. For Britain and France, their respective failures in Cyprus and Algeria were as much to do with poor conduct at the operational level as they were

a result of unrealistic national identities. Failure in responding successfully to an insurgency is repeatedly shown to be the product of underestimating the threat as well as overestimating one's abilities, misunderstanding the operational as well as the international environment, and also due to a blinding inability to adapt and consider alternative options—such as a realistic end-state. This was certainly true of the United States in Vietnam. Time will tell if history will be kinder with respect to Iraq.

Published in mid-2008, some may disagree with aspects of Corum's analysis, particularly with regard to the United States' 2007 Iraq 'surge'. Further, readers may question the validity of some of Corum's historical assertions and find error in his analytical approach. Ultimately though, *Bad Strategies* remains an engaging study of political decision-making, and reinforces the point that strategies are always dependent upon well-crafted policies and flexible approaches. Arguably, there have been stronger works published on COIN of late; however, those with an interest in senior strategic decision-making within a context of failure would do well to read *Bad Strategies.*

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TITLES TO NOTE

Listed below is a selection from the review copies that have arrived at the *Australian Army Journal*. Reviews for many of these books can be found online in the relevant edition of the *Australian Army Journal* at: http://www.defence.gov.au/army/lwsc/Australian_Army_Journal.asp

- *No Clear Flight Plan: Counterinsurgency and Aerospace Power*, James Fergusson and William March (eds), Centre for Defence and Security Studies, ISBN 9780978086848, 238 pp.

- *North Korea on the Brink*, Glyn Ford with Soyoung Kwon, Pluto Press, ISBN 9780745325989, 249 pp. (Distributed in Australia by Palgrave Macmillan)

- *Reporting the War: Freedom of the Press from the American Revolution to the War on Terrorism*, John Byrne Cooke, Palgrave Macmillan, ISBN 9781403975157, 272 pp.

- *The US Military Intervention in Panama: Origins, Planning, and Crisis Management June 1987–December 1989*, Lawrence A Yates, Center of Military History, United States Army, ISBN 9780160794193, 313 pp.

- *This Has Happened: An Italian Family in Auschwitz*, Pierra Sonnino, Palgrave Macmillan, ISBN 9780230613997, 218 pp.

- *Forewarned Forearmed: Australian Specialist Intelligence Support in South Vietnam*, 1966-1971, Blair Tidey, Strategic and Defence Studies Centre, ISBN 0731554671, 84 pp.

- *Inside the Stalin Archives: Discovering the New Russia*, Jonathon Brent, Center of Military History, United States Army, ISBN 9781921372827, 335 pp.

- *Honor and Fidelity: The 65th Infantry in Korea, 1950-1953*, Gilberto N. Villahermosa Brent, Scribe Publications, ISBN 9780160833243, 329 pp.

- *Danger Close: Commanding 3 Para in Afghanistan*, Colonel Stuart Tootal, John Murray, ISBN 9781848542594, 306 pp.

- *The Tiger Man of Vietnam*, Frank Walker, Hachette Australia,
  ISBN 9780733623660, 356 pp.

- *East Asian Multilateralism*, Kent E Calder and Francis Fukuyama (eds),
  Johns Hopkins University Press, ISBN 9780801888496, 281 pp.

- '*More than an Ally?*': *Contemporary Australia-US Relations*, Maryanne
  Kelton, Ashgate Publishing, ISBN 9780754673675, 226 pp.

- *Political Islam in Southeast Asia*, Gordon P Means, Lynne Rienner Publishers,
  ISBN 9781848542594, 306 pp.

- *Political Economy in a Globalized World*, Jorgen Orstrom Moller,
  World Scientific, ISBN 9789812839107, 442 pp.

- *Terrorism, War and International Law: The Legality of the Use of Force
  Against Afghanistan in 2001*, Myra Williamson, Ashgate Publishing,
  ISBN 9780754674030, 277 pp.

- *Toward the National Security State: Civil-Military Relations during World
  War II*, Brian Waddell, Praeger Security International, ISBN 9780275984083,
  200 pp.

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NOTES FOR CONTRIBUTORS

The editors of the *Australian Army Journal* welcome submissions from any source. Two prime criteria for publication are an article's standard of written English expression and its relevance to the Australian profession of arms. The journal will accept letters, feature articles, review essays, e-mails and contributions to the *Point Blank* and *Insights* sections. As a general guide on length, letters should not exceed 500 words; articles and review essays should be between 3000 and 6000 words; and contributions to the *Insights* section should be no more than 1500 words. The *Insights* section provides authors with the opportunity to write brief, specific essays relating to their own experiences of service. Readers should note that articles written in service essay format are discouraged, since they are not generally suitable for publication.

Each manuscript should be sent by e-mail to <army.journal@defence.gov.au>, or sent printed in duplicate together with a disk to the editors. Articles should be written in Microsoft Word, be one-and-a-half spaced, use 12-point font in Times New Roman and have a 2.5 cm margin on all sides. Submissions should include the author's full name and title; current posting, position or institutional affiliation; full address and contact information (preferably including an e-mail address); and a brief, one-paragraph biographical description.

The *Australian Army Journal* reserves the right to edit contributions in order to meet space limitations and to conform to the journal's style and format.

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All sources cited as evidence should be fully and accurately referenced in endnotes (not footnotes). Books cited should contain the author's name, the title, the publisher, the place of publication, the year and the page reference. This issue of the journal contains examples of the appropriate style for referencing.

When using quotations, the punctuation, capitalisation and spelling of the source document should be followed. Single quotation marks should be used, with double quotation marks only for quotations within quotations. Quotations of thirty words or more should be indented as a separate block of text without quotation marks. Quotations should be cited in support of an argument, not as authoritative statements.

Numbers should be spelt out up to ninety-nine, except in the case of percentages, where arabic numerals should be used (and *per cent* should always be spelt out). All manuscripts should be paginated, and the use of abbreviations, acronyms and jargon kept to a minimum.

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Authors submitting articles for inclusion in the journal should also attach a current biography. This should be a brief, concise paragraph, whose length should not exceed eight lines. The biography is to include the contributor's full name and title, a brief summary of current or previous service history (if applicable) and details of educational qualifications. Contributors outside the services should identify the institution they represent. Any other information considered relevant—for example, source documentation for those articles reprinted from another publication—should also be included.