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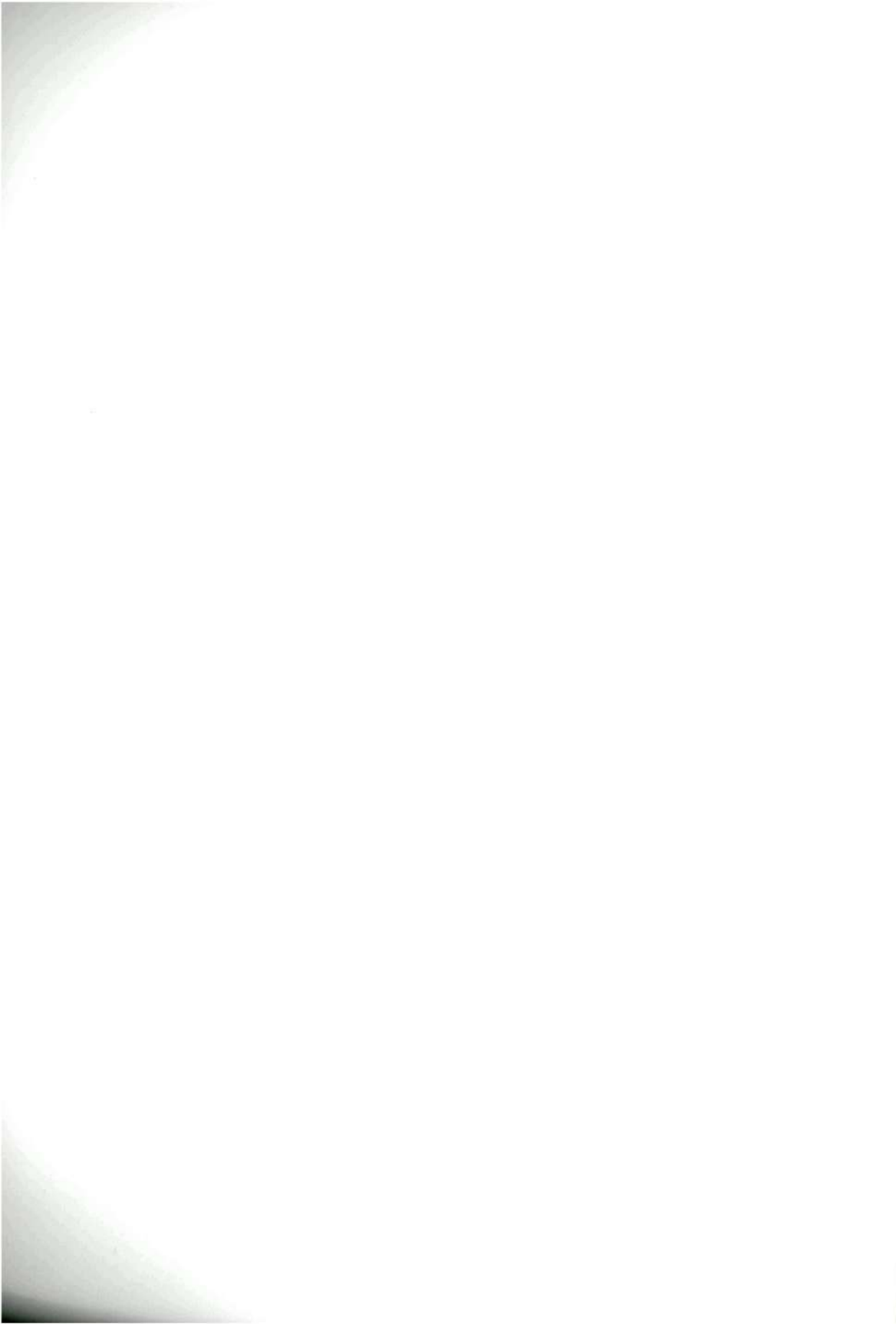


ARMY JOURNAL

ISSUE 1/99

THE PROFESSIONAL JOURNAL OF THE AUSTRALIAN ARMY







AUSTRALIAN ARMY JOURNAL

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ISSUE 1/99

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NOTE: The *Army Journal* Editorial Board welcomes submissions of articles, book reviews and letters for the next journal edition. As a guide, the approximate length for articles is 3 000-3 500 words; book reviews 1 000 words; and letters 500-750 words. Authors are responsible for their manuscripts' accuracy and source documentation. All quoted materials are to be in quotation marks, and endnote citations and bibliographies are to be used (where appropriate). Submissions should be in hard copy and on disk (preferably in Word 97 or as text files). Original photographs and diagrams with details of their intended placement in the manuscript should be submitted, in addition to the manuscript—that is, graphics embedded in the manuscript are insufficient. Submissions are to include the author's name, workplace address, contact number and a brief biography. All contributions to the journal will be considered for inclusion. The Editorial Board reserves the right to reject submissions on such grounds as the submission is too long, covers a subject that has been exhausted, or can be dealt with by the author's unit. It also reserves the right to edit submitted manuscripts. Submissions should be sent to the Senior Editor *Army Journal*, Doctrine Production, FDG, CATDC, Tobruk Barracks, PUCKAPUNYAL VIC 3662. The Editorial Board accepts no responsibility for errors of fact. The views expressed in articles, reviews and letters are each author's own. Views are not to be construed as the official Army position or policy, and they do not change or supersede any information in other official Australian Army publications. ©Copyright Commonwealth of Australia (Australian Army) 1999. Published by Doctrine Production, FDG, CATDC.

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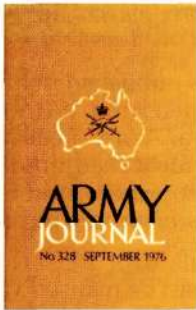
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In collaboration with the Land Warfare Studies Centre



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A MESSAGE FROM THE CHIEF OF ARMY

In releasing *Land Warfare Doctrine, Pamphlet 1, The Fundamentals of Land Warfare*, I called for rigorous intellectual debate of philosophies, concepts and doctrine. The resurrection of the *Army Journal* will provide the central forum for this debate and analysis of the full spectrum of issues impacting specifically upon the development of Army. I intend that the professional debate fomented through these pages will be complementary to papers published through the Land Warfare Studies Centre and a continuing high level of Army input to the *Defence Force Journal*, for which the original *Army Journal* was the genesis in 1976.

The first *Australian Army Journal* was published in July 1948 as a progression from *Army Training Memorandums* and represented but one step towards informing the reorganization of Australia's post-war Army on developments within the profession of arms. The aims then were 'to provide a medium through which to convey the latest trends in military thought and developments, and to stimulate thought and encourage the study of military art.' The aims of producing this publication have not changed from the original.

Lastly, the aims for the journal will not be realised without the professional effort of all ranks in providing contributions. I therefore encourage members, past and present, to engage themselves in analysing all major conceptual, technological and doctrinal issues we face in the constant pursuit of informed discussion on the full range of matters affecting all components of Army capability. This journal provides an important mechanism through which we will advance towards our goal to be concept led and capability based.

F.J. Hickling, AO, CSC
Lieutenant General
Chief of Army





Welcome to the 1/99 *Australian Army Journal*. The journal's primary emphasis will be on the tactical and operational levels of land warfare, but will also include contributions on strategic issues critical to the Army and relevant lessons from military history.

Early this year, the end of publication of the *Combat Arms Journal* and the *Combat Service Support Journal* was advised through the chain of command and in the *Army Newspaper*. At that time it also was advised that the intended theme for this first issue of the 'new' *Army Journal* would be 'Fighting Power and Manoeuvre in the Littoral'. While there has been much debate and feedback on *LWD 1 – The Fundamentals of Land Warfare*, few of the contributions specifically address these themes. Consequently, it was decided to produce this issue without a central theme, rather than hold over publication of contributions to match a particular topic.

Recent events, however, have brought into sharper focus issues which are addressed by articles in this journal.

Lessons from United Nations operations across the globe continue to accentuate warfighting skills as an essential requirement for peacekeeping missions. A trend towards operations in more complex terrain has examples in a number of conflicts and continues to gather pace. Developments in the United States and experimentation at home, driven by changes in tactics, technology and the philosophical underpinning of warfighting concepts, may begin to indicate future directions for doctrine, force structure and capability requirements. Perhaps above all is the recognition that regardless of all war's enduring features, the constant for the Army is the human element of warfare.

A late rush provided editorial staff with the necessary range and volume of material to enable production of this issue. Contributors whose articles do not appear here will have their articles considered for later issues. We believe that additional contributors will be encouraged by the efforts of the Graphics and Publishing Section at the Combined Arms Training and Development Centre in producing this high quality journal.

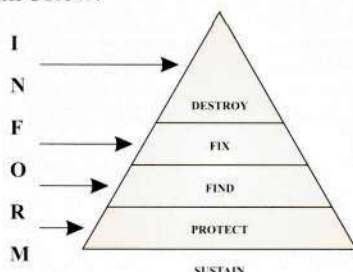


The release of *Land Warfare Doctrine, Pamphlet 1, The Fundamentals of Land Warfare*, has generated much feedback on a wide range of issues. As a fresh start for this first issue of the 'new' *Army Journal*, some of this feedback has been used for what is hoped will prove to be a catalyst for lively, but informed debate through this regular feature. A comment on the proposal to include 'Information' as a principle of war (initially published in the *Army* newspaper) has been reproduced in these pages along with one reader's response to the comment. Where possible, the Editorial Board will give authors the right of reply in the same issue as published letters.

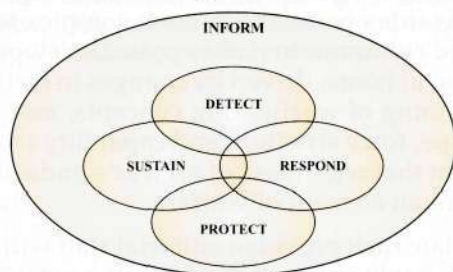
LWD 1 FEEDBACK - as it appeared in the *Army* newspaper, Edition 986, page 21.

Chapter 6 of *LWD1* is titled 'Fighting smart - Winning the land battle'. Within this chapter, the 'tactical functions' are described as follows: 'Effective manoeuvre requires land forces to be proficient in the performance of five tactical functions: *detect, respond, protect, sustain* and *inform*'. These functions were developed in the Army in the 21st Century Study and are still being validated as part of the RTA trials. There has been some feedback about the appropriateness of these functions and the way they have been illustrated. Specifically, several respondents have criticised the use of the word *respond* as being too reactive, and suggested alternatives such as *act* or *strike*. Below are two alternatives to that contained in *LWD1*:

The traditional functions of manoeuvre are find, fix and destroy. 'Inform' is germane. It's like gravity - it's there or the functions don't happen. 'Respond' is a feeble term, inferring and teaching that we'll react to the enemy, whereas fighting smart is about getting the upper hand and causing the enemy to react to us - indeed, react inappropriately to us. I offer the diagram below:



The current diagram of the tactical functions appears to suggest one event at a time which is very static and appears to go against the theories of continuous operations and manoeuvre. In particular, you cannot flow from one tactical function to another without 'informing'. I suggest the diagram be amended to that shown below for the following reasons.



Due to C4ISR and BOS, the information flow should be continuous. The suggested figure better represents the theories of manoeuvre, network-centric warfare and the ability (by freedom of action) to shape the battlespace. Through directive control, the subordinate has the ability to manoeuvre his force to best achieve the mission within boundaries. In the suggested diagram, the force is depicted by the four joined circles, and the boundaries by the information that the subordinate commander has received. With additional information this boundary can change through directive control, '...where circumstances require a commander to specify a course of action to be adopted'.

MAJOR P. SWINSBURG
(AUSTRALIAN STUDENT)
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My comments pertain to one of the recent editions of the *Army* newspaper and your comment regarding the position of placing 'Information' as a principle of war.

Firstly, might I suggest that we review the other 10 principles of war as a start to the re-thinking of the application of military power. Whilst I do not disagree with the content of the existing principles, the question is 'If these principles "do not guarantee success, to ignore them, invites failure", does this imply that all armies (at least Western armies) share the exact same principles of war?'

The US principles of war are:

- * Mass
- * Manoeuvre
- * Offensive
- * Objective
- * Economy of Effort
- * Unity of Command
- * Surprise
- * Security
- * Simplicity

In this quest to quantify our principles, we take a very Jominian perspective, in trying to unlock the golden answer to the secret of waging war. Both Jomini and Clausewitz are great scholars in the application and analysis of the military art; however, our doctrine up to this point has concentrated on mass and attrition. Only over the past 5 years has there been a true awakening about the concept of manoeuvre warfare. Therefore, to quantify our principles in a convenient checklist will make the application of the military art less risky – but the principles must be reviewed if we are truly to continue to evolve. Our principles have not been reviewed for over 30 years. Do we still employ the military the same way we did 30 years ago, against the same enemy? If no, then I believe we need to review the principles upon which we apply military power.

If all countries have different principles, then which country is right? The adoption of principles is connected to who writes the doctrine at the time, and who has the power of veto over the principles. I would suggest that before we consider the inclusion of 'Information' we must review all of the principles.

I would also add that concepts provided to us from Clausewitz and Napoleon (the father of the revolution in military affairs) should also be added. Only after this will we be able to truly claim that we have broken the shackles of the post-Cold War environment and truly embraced manoeuvre warfare.

I submit that terms such as –

‘selection and maintenance of the aim’ be reworked to include mention of the commander’s intent,

‘concentration of force’ is irrelevant if we do not include reference to the ‘decisive point’,

‘cooperation’ should refer to operating in a Joint and multi-national environment, and ‘flexibility’ should make reference to the reduction in ‘friction’.

Also, these 10 principles are only applicable at the tactical level. If anyone disagrees with this, I would then challenge him/her to consider the operational level of warfare and see whether or not other factors need to become principles, such as sequencing, logistics, decisive points, lines of operations, strategic endstate etc. Warfare at each level is different and will need different principles.

With regard to ‘Information’ as a principle of war, has not information always been an important factor? Why do people think that because we now talk about ‘Information’ operations, it is more important than it was in WW1, WW2, Vietnam, Korea, Somalia, Granada, Panama and Kosovo etc. Ammunition advances have increased the precision of ammunition; yet, precision is not a principle of war – at least not yet – but it is one that may require consideration.

When we determine that ‘Information’ should be a principle, are we referring to offensive information or defensive information. Information is more a factor than a principle, but with the emerging patterns of modern conflict, aspects such as psychological operations and information operations will often determine who is victorious.

It is my suggestion that ‘Information’ be included in the complete review of all 10 principles. Only then can it be considered on its merits.



CHAPLAIN G. FLYNN
SENIOR CHAPLAIN HQTC-A

CHAPLAIN F. WORTLEY
SENIOR CHAPLAIN HQ-LSF

CONFUSION BETWEEN MORAL AND MORALE

LWD1 has been the subject of much comment and discussion in the Army, since its release this year.

We have chosen chapter 5 of *LWD1* for our contribution to the commentary, as its focus on the moral component of fighting power is the area in which we have expertise and are most able to make appropriate comment.

Noticeably, the value of human life is not a clear given in *The Fundamentals of Land Warfare*; as a result, the following significant considerations are not included in the document.

- * the effect of moral or ethical decision making both on the decision-makers and those who implement them,

- * the conduct of the war and treatment of the enemy,
- * the required factors that underpin human spirit when in isolation,
- * attitudes governing issues of right and wrong,
- * the view of individual responsibility tied to a too narrow ethical framework based on mateship, and
- * the reduction of Army's values to 'mateship'.

LWD1 states that the Army derives its core values from the tradition of mateship. The notion of 'mateship', however, is not sufficient to provide inner resources by itself. There is no recognition or acknowledgment of objective morality. The notion of itself is not strong enough to carry the weight of the content of courage, initiative and teamwork. It only looks inward (within self and the Army). There is a requirement to create an environment/framework within which soldiers are able to make decisions they can live with beyond the battle and the lives they will live outside the theatre of war. Within war, we must be sowing the seeds of peace; therefore, ethical and responsible action/attitude must lay down the foundations of post-war friendship between nations.

In Australia, the more fundamental notion of the dignity of the person and the uniqueness of human life is primarily derived from a Judeo Christian ethic. Chapter 5, *LWD1*, does not recognise this fact. Furthermore, future value systems should reflect those elements of ethical and moral values of other religious traditions which reflect the highest respect for the intrinsic value of human life. This must reflect the religious and non-religious traditions that are present in Australia as a multicultural society.

Some of the definitions in chapter 5 provoke discussion. For example, 'Leadership' is defined in terms of motivation. This is an impoverished definition — one looks after soldiers for no other reason than to achieve the objective. This definition makes expediency the underlying value rather than respect for the individual or even mateship. As a result, there is a failure to demand an inculcation of a basic sense of respect for the dignity of human life. The leadership style espoused is a good one — but one sided. Hitler is an excellent example of this style of leadership. It is in the national interest that the Army train leaders who can wholesomely live with the decisions they have made.

Legitimacy is another element of the moral component of fighting power which is questionably defined in *LWD1*. 'Legitimacy' is defined as being compliant with legal conventions. Again, this is an impoverished definition. International law does not possess the inherent capacity to ensure compliance. *LWD1* must provide commanders at all levels with more powerful tools than legal conventions and narrow, one issue moral parameters.

Furthermore, chapter 5 defines 'moral' as the will to fight. Here moral is confused with morale. Moral can be defined as the right to fight. This part of the chapter reduces morality to military education. Military education flows out of moral imperatives before it attempts to inculcate them. This definition of 'moral' sets the Army up as its own arbiter. Therefore, it cuts itself off from moral accountability to the individual, the enemy soldier, Australian society and the world community.

The Army values represented in *LWD1* must be firstly derived from and reflect those of the Australian society. The Army can build upon those of our society and does. The values do not materialise from within a vacuum. The task for *LWD1* ('a work in progress') is to enunciate the Army's values in such a way that they are robust enough to acknowledge their derivation and enable each individual to commit him or herself to a legitimate order or course of action.



BY MAJOR C. KNIGHT

*The future of warfare lies in the streets, sewers, high rise buildings, industrial parks and the sprawl of houses, shacks and shelters that form the broken cities of our world.
We will fight elsewhere, but not so often, rarely as reluctantly, and never so brutally.*

Lieutenant Colonel Ralph Peters,
US Army

OVERVIEW

The intent of this article is to highlight the significance of Military Operations in Urban Terrain (MOUT) and promote contribution to a debate on doctrine and technique. The high probability, demands and nature of urban operations are explained and a world-wide neglect of MOUT is noted and reasons discussed. The localised profile of urban operations training in Australia is described, observing that this is both a deficiency and an opportunity for developing a capability from first principles. The article uses indicative MOUT issues to indicate the broad scope for development effort and concludes by identifying two areas for immediate action.

THE REQUIREMENT FOR MOUT

The traditional Western military view is to avoid MOUT where possible. There are good reasons for this. It is slow, difficult, and costly in resources and manpower. Yet, urban areas are the most likely environment for a large proportion of future operations.

MOUT Imperatives. Our world is urbanising – exponentially. Everywhere, development spreads along routes between cities; and, in our region, shanty towns sprawl along the littoral. There is simply less room left to manouvre clear of urban terrain during war. For peacemaking and peacekeeping operations, the ‘trouble spots’ for regional and UN deployment always include the urban areas – where the people are. Irregular and unsophisticated forces can and will choose to engage advanced armies on urban terrain. Here, an inferior force can take advantage of the inhibiting presence of civilians and a reluctance to apply firepower or engage in attritional battles. This is where poverty, overcrowding and crime foster dissent and where warring factions live. Consequently, MOUT is almost inevitable, since support operations will typically follow the population into the urban areas, and for most warlike operations, urban sprawl is too extensive to avoid.

Denial Behavior. The imperative of conducting MOUT is not reflected in doctrine, training or equipment. Somehow a wish to avoid MOUT has translated into a perception that there is a choice. This is a worldwide phenomenon, and it is not new. In the 1960s, the historian S.L.A. Marshall described 'a curious void in military study' surrounding urban operations, whilst noting a contradiction with the reality that 60 per cent of European combat in WWII was urban. When the training facilities in bombed cities closed at the end of that war, there were no substitutes created for 30 years. Why is this necessity to conduct urban operations so little regarded?

Lieutenant Colonel Ralph Peters¹ suggests that the military are 'romantic and spiritual reactionaries' who long for 'gallant struggles in green fields'. This may overstate the case, but perhaps he does touch on an element of the military psyche. The environment we are presented with shapes our paradigms of combat. Film, books, doctrine, and prospectively, training areas far away from cities, all tend to emphasise a 'green fields' setting. Certainly in discussion, many soldiers seem to limit their anticipation of urban operations to security roles. Whilst acknowledging that these are the most likely urban operations, such a lack of imagination has profound effects. A number of armies, like the Australian Army, 'structure for war and adapt for peace'. If they don't anticipate war in urban areas, then this philosophy leads them to treat operations there as something they will 'adapt' to in a reactive improvised way, rather than recognise towns as a normal working environment just like the bush.

THE NATURE OF URBAN TERRAIN

Some might question the special nature of urban terrain. Since most of us are intimately familiar with cities, it might seem logical to assume that intelligent application of existing principles is sufficient. To apply tactics, however, we must understand terrain. The *special* thing about urban terrain is that we have not yet learned to understand it tactically. It is no more or less special than the jungle was to our predecessors in 1940, before they were trained to become familiar with it.

Soldiers need to learn that urban terrain is a cellular complex of obstruction to movement, observation, communications and fire. Walls, floors and roofs are barriers that partition buildings into discrete 'boxes within boxes'. Indoors, soldiers are isolated, confined and surrounded by 'dead ground' in three dimensions. There are innumerable hiding places or close approaches for an enemy. Yet, abruptly contrasting with this pervasive cover, the adjacent total exposure of the street-space channels movement and fire along a linear matrix. The overall effect is of a dense, granular form that mixes combatant and non-combatant, isolates soldier from soldier, separates subordinate from commander and conceals the situation in a disorientating 'smog of war'.

MOUT REQUIREMENTS

The first and primary lesson learnt was that street fighting is an acquired art and that there are only two ways to acquire it; by careful planning and training and a high standard of discipline or by bitter experience.

Report by 1st Canadian Division on the Battle of Ortona

The additional demands of MOUT can be significant. Ordinary tactical tasks are more difficult and the range of tasks is increased by the presence of a population. Physical separation by buildings means that activity and its intensity can vary dramatically within a locality. The United States Marine Corps (USMC) describes this diversity as 'three block war'. Elements of a single unit might, within a few minutes or hundreds of metres, be engaged in intense combat with full use of firepower, maintaining peace by negotiating between two warring factions and distributing relief supplies. Such variation of tasks and intensity demands the training and discipline to seamlessly switch between appropriate behaviors, for example, to conduct an aggressive assault in one moment and then calmly to negotiate with frightened refugees in another.

Training. The urban environment requires special techniques. Some are a refinement of existing skills, for example developing fieldcraft into 'streetcraft'. Marksmanship must be improved to discriminate non-combatants and engage fleeting and partially exposed targets. More soldiers require specialist skills such as the employment of explosives to achieve entry. The obligation to assist civilian populations may demand a new suite of support skills. The critical requirement, however, is training in tactical techniques that are unique to urban terrain, such as building search or clearing, and delivering intimate direct fire support. Time and again, in urban operations from Manila to Belfast or the Suez to Grozny, the penalties for employing troops without appropriate training have been heavy casualties, failed missions and recrimination.

AUSTRALIAN LACK OF EXPERIENCE AND TRAINING

Australian troops have relatively little experience of MOUT. From WWII through Korea and Vietnam, our vaunted expertise has been in desert and then jungle fighting. The resultant and still prevailing military cultures treat urban operations as an aberration, or at best, minor aspects of a bush campaign. This view has been sustained by strategic guidance focusing us on the defence of Northern Australia against raiding and harassment.

Whilst the need for MOUT training was recognised in post-operational studies from Vietnam and Somalia, this never translated into Army-wide policies and priorities. Effort by individuals, units and formations has improved matters and, for instance, led to the building of the High Range Training Facility near Townsville. Unfortunately, this effort is not underpinned by adequate consistent individual training requirements. Low priority has kept delivery of MOUT doctrine stalled since at least 1982. Consequently, procedures vary between units; skill requirements mainly reflect commander's enthusiasms and corporate knowledge built up in units at great effort has been repeatedly lost with the departure of key personnel.

Furthermore, effort is limited by a perception that need is confined to the Ready Deployment Force (RDF). This ignores both the need for MOUT training for RDF reinforcements and the defence of Australian urban areas. Offshore conflict may require significant numbers, which must eventually be drawn from the latent force. Reinforcements or rotation units must have the necessary skills. Whilst some training must wait for the pre-deployment period, there must be a basis for such training. Under pressure, commanders and trainers are likely to emphasise the familiar, and few outside of the Townsville Brigade are currently familiar with even basic MOUT. Our planning has also assumed that any enemy attacking Australia will conveniently conform to our design for battle by inserting across the Northern Arc, rather than positionally and functionally dislocating us with operations in our major cities. If the latter occurs, then it will probably not be the RDF who are called on to respond.

The highest profile, and until recently, the only developed AS 'urban' capability (albeit with a domestic and permissive focus) resides within the Special Air Service Regiment (SASR). This has fostered the notion that MOUT equates to close quarters battle (CQB), and as such is an exotic Special Forces 'black art'. Consequently, proposals to attempt MOUT training are too often seen as distractions from 'the basics'. This misses the point that MOUT should also be a basic skill. In most plausible scenarios, onshore or offshore, a rifle section is far more likely to have to patrol and search buildings than conduct a section attack, yet MOUT only gets the most rudimentary cover during infantry initial employment training (IET).

DEFICIENCY AND A CLEAN SLATE

We should, without rancour, acknowledge a deficiency in our training and doctrine. Having done so, we should also recognise that our collective inexperience frees us from preconceptions and creates opportunity. As Western armies recognise the changing nature of conflict and an increased need for MOUT, they are struggling to develop new methods. Nowhere is the attritionalist approach to warfare more entrenched than in MOUT tactics. In Australia, we do not have this burden. We do not have a generation of officers who all conducted the same ponderous defence and clearing of the same training village. Developing techniques that enable a manoeuvrist MOUT will not be easy, but there is a clean slate to write on and our best minds will not be inhibited by the dead hand of military dogma.

In seizing this opportunity, we will have a particular advantage – our soldiers. The isolating nature of urban terrain makes MOUT a section commander's war, a cacophony of independent small-scale actions. This is an environment where our diggers can excel. Emerging concepts such as those described in the USMC 'Future Military Operations on Urbanised Terrain'² are likely to increase the demands at the lowest levels. An example concept is to network communications and delegate control so that any soldier can speak to any other, and control may be temporarily vested in the person with best situational awareness, rather than the command hierarchy. These are still unclear directions; but, with our tradition of independence of junior thought and action, we are in many ways far better poised to advance than most other armies.



Improvised MOUT Training

ISSUES AND CHALLENGES

The challenges are great. We are a tiny army learning to play a manpower intensive game and will need novel methods that harness our advantages. We need to think hard about the techniques and tools we select, for we will be laying totally new foundations for tactical thought. If we are to excel, we need original thinking within all corps and Services, from full-time and part-time members of all ranks. There are many issues needing attention. The following describes some of them:

INFANTRY

- * *What size should our smallest tactical team be?* Teams of three represent economy of effort, having just sufficient capacity to 'cover their own backs' indoors. Teams of four composed of pairs suit leapfrog movement and can better maintain all-round observation outside on the street.
- * *What is the best organisational structure for MOUT?* Three teams of four soldiers probably provide optimum tactical flexibility for in-street patrolling. Independent building clearing also typically requires about twelve persons because of the need to assure security during clearing. The maximum size for a single assault team is perhaps six. Our section of nine does not correspond to these likely tasks well, nor does the three element platoon structure suit symmetrical tasks such as clearing both sides of a street. Regrouping the platoon for urban work, however, cuts across section identities and fails to

achieve seamless transition between operating environments. MOUT requirements, therefore, should be part of the debate about restructuring the infantry platoon raised by Captain Forbes in the *Combat Arms Journal* 1/98³.

RESERVES

- * *What role should the Reserves take in MOUT?* Last year, the Chief of Army stated that he was looking to the Reserves to take a lead on MOUT⁴. Our major cities lie within areas of responsibility allocated to reserve formations. Small and widely dispersed forces might be required to respond to enemy action, perhaps facing both locally unfavorable force ratios and the difficulties of urban terrain.

COMMUNICATIONS

- * *How will we deliver reliable communications?* The walls of urban areas screen and isolate radio systems as well as people. The paradox is that as tactical dependence on communications systems increases, radio performance is degraded.
- * *How should we structure radio networks?* There is a clear need for elements to be able to immediately communicate directly with their neighbours and supporting elements in a way that hierarchical networks do not permit. However, placing all stations on one net quickly results in overloading.
- * *What new systems should we exploit?* Ultra high frequency (UHF) systems overcome many of the screening problems encountered amongst buildings with very high frequency (VHF) equipment, but require multiple, redeployable base stations to achieve coverage. Mobile phone type systems may offer selectable one-to-one, or one-to-many messaging facilities, text and graphic displays

ARMOUR

- * *How should we use armour?* Armoured vehicles are vital urban combat multipliers, offering force preservation across coverless fire-swept areas, improved situational awareness and tempo. In a small army, intolerant of casualties and confronted with urban complexity, we cannot afford not to exploit our armour.
- * *How can we use techniques to reduce armour vulnerability to hand-held weapons?* Urban clutter, standing structures and the ability to operate armoured fighting vehicles (AFVs) from within and through buildings may offer screening against high explosive anti-tank (HEAT) warheads. When restricted to the streets, smoke offers concealment from aimed fire, but may require the capability to drive 'blind' or receive directions from a thermal imaging-equipped third party.

- * *Do we need better protected vehicles and improved survivability?* Armoured personnel carriers (APCs) with tank levels of protection would reduce risk profiles on operations in or out of cities. (An example is the Israeli Achzarit: a T55 with turret removed, up-armoured over 360 degrees; machine gun armed and with a rear exit installed alongside an offset powerpack, developed as a direct result of infantry and engineer casualties in the Lebanon campaign of 1982.) Applique armour kits like those fitted to British vehicles in the Gulf War will protect against the prevalent urban threat weapon, the RPG-7/SPG-9 series HEAT warhead.
- * *Can we exploit other technology?* Active protection systems detect and destroy incoming anti-armour rounds. Alternatively, precision weapons slaved to acoustic or radar small-arms locating systems, offer tremendous deterrent potential, though not true protection. Closed-circuit TV may be mounted on vehicles to improve visual cover of vehicle blind spots.



Improvised MOUT Training

ENGINEERS

- * *How do we improve mobility into and through buildings, so we can move hidden from view?* The potential offered by explosive breaching cannot be realised until entry charges are readily available and soldiers in all manoeuvre elements are all trained in their use. For situations that will not permit explosive entry, tools are needed to swiftly breach doors and remove glass from windows, with minimum damage and hazard to the operator.
- * *How can we climb up onto roofs, balconies and through windows without having to carry large ladders?* Specialist aids exist, but the limited market makes these products expensive and not necessarily much better than something assembled in unit workshops.
- * *What are the counter-mobility tasks?* A major demand on personnel is to secure cleared areas. This could be reduced through the employment of linear personnel obstacles, effectively producing a force multiplier.

FIRE SUPPORT

- * *What are the MOUT tasks for artillery?* Direct fire may be required. Currently, only mortar and artillery rounds have the delay fusing to enable them to be fired through the walls of buildings to deliver their effect within confined spaces. High elevation fire will often be the only means of reaching targets behind buildings. High explosive warheads may in some cases impose smaller overall hazards to non-combatants than supporting small arms fire, since the fragmentation effects may be far more localised than ricocheting and overpenetrating bullets.
- * *Can we overcome the indiscriminate character of indirect fire?* Current conventional artillery and mortar rounds fired on minimum charges (especially from single tubes) have sufficiently tight dispersion to enable consistent engagement of small areas. Precision guided munitions (PGM) may not be widely available and have significant limitations for delivery close to supported troops or civilians. If the munition fails to guide, error probabilities are far larger than for 'dumb' projectiles.
- * *How can we apply smoke in depth?* Obscuration enables urban movement, and this need for smoke increases with restrictions on other neutralising fire-power.
- * *How can close air support be coordinated on urban terrain?* Aircraft overcome the short lines of sight at ground level and provide one of the most effective ways of psychologically dominating the urban battlefield and supporting clearing operations. An aircraft such as the Hawk (the new RAAF advanced trainer) is a sufficiently stable platform to bring cannon fire to within about 75 metres of our own troops.

THE WAY AHEAD

Australian MOUT doctrine has had a gestation of at least 16 years. Shortly, it will emerge as 'developing doctrine'. Validation will be both more difficult and more important without a broad base of experience and knowledge to call on. Input to review of the doctrine from across the Army is vital.

The other ABCA armies and almost all of NATO run MOUT training facilities with dedicated training staff. These armies have learned that even where there is a history of urban operations and local facilities are available, dedicated training support is required to achieve minimum capability. There is no reason to suppose that we will not need the same level of support, although the tyranny of Australian distances complicates the issue of location. More urgent though, is the need to rapidly disseminate basic urban doctrine and techniques. A possible immediate solution is to form a temporary MOUT train-the-trainer team, who could deliver a limited number of short, intensive training packages at central locations to selected staff from all combat arms units. This solution might include delivery of 'familiarisation' packages at the Arms schools. The temporary training team approach has the advantage of speed and economy. It is only by first widely generating a fairly basic awareness of MOUT that the debate on how to develop in the longer term will be properly informed.

CONCLUSION

Urban terrain will be the principal complex environment for most future military operations. MOUT deserves special attention because of this increasing likelihood, combined with a continuing reluctance to recognise its importance. Streetscapes present particular tactical demands, but the greatest is learning to comprehend this environment as readily as we do the subtleties of vegetation and relief elsewhere. The need to understand MOUT and develop new methods suitable for our particular circumstances extends across the Army. Recent images showing Australian soldiers in the streets of Dili should prompt us to embrace that challenge. ✕

ENDNOTES

1. Peters, Ralph, Lieutenant Colonel, US Army, 'Our soldiers their cities', *Parameters* 1996.
2. 'Future military operations on urban terrain' 25 July 1997 on the USMC Web site.
3. Forbes, A.J., Captain, 'The Infantry Platoon of the future - a Need for Change' *Combat Arms* 1/98.
4. CA address on future directions 1998.

BIOGRAPHY

Major Charles Knight graduated from Royal Military Academy Sandhurst in 1976. After service in the British Army, Royal Air Force and other overseas forces he joined the Australian Army Reserve in 1990. He has held various postings with the 1st Commando Regiment, instructed at Land Warfare Centre and commanded B Coy 2/17 Royal NSW Regiment. Since being tasked with developing urban training for the British Army's reserve Parachute Regiment units in 1982, he has made MOUT a speciality, designing training, lecturing and conducting operational evaluation. He is currently on full-time service as the SOJ8 (Development) at Headquarters Special Forces.

WINNING THE 'THREE BLOCK WAR'

A Few Suggestions from Quantico

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Ne cras! Ne cras!

Quintilius Varus, Roman General, 9 AD
(From the Latin: 'not like yesterday')¹

INTRODUCTION

On 30 June 1999 at the historic 8th and I Marine Barracks, Washington, General Charles C. Krulak, 31st Commandant of the Marine Corps (CMC) handed over the Marine Corps banner to the incoming 32nd Commandant. Perhaps one of General Krulak's enduring legacies to the US Marine Corps (USMC) will be the widespread use of the phrase: 'three block war'. As a result, the Marines, even more than the US Army, is now acknowledged for their efforts to deal with the many faces of urban operations.²

For the Australian Army, the post-Cold War strategic environment offers similar challenges to the USMC, in terms of operations in the littoral, and an increased likelihood of operations in urban environments across the spectrum of conflict. Most observers would agree that the post-Cold War realignment of states is likely to escalate, with the number of violent actions in cities increasing proportionately. Within the area of direct military interest to the Australian Army, over the last decade, most of the characterisations of the *three block war* have been evident. The message for the Australian Army is clear: prepare for urban operations.

Much has been made of General Krulak's suggestion that a *three block war* characterises potential urban operations. He envisaged:

When Marines deploy into urban areas today, and in the future, they will need the flexibility to address a wide variety of crises. In one city block, a Marine will provide food, care, and comfort for an emaciated child. In the next block, you will see this Marine with outstretched arms, separating two warring tribes. Then in the third city block, this same Marine will engage in intense house-to-house fighting with hostile forces.³



Photo Courtesy: LCPL Scott A. Harwood, USMC

The world is changing. Approximately 75 per cent of people will be living in cities by the year 2020. And, '...current models estimate that 70 per cent of these cities are located on the world's littorals [coastal regions]...' ⁴ and seven of the twelve largest economies will have shores on the Pacific or Indian Oceans. ⁵ General Krulak assessed that 'many of the urban littorals will be ripe for conflict. There will be social, cultural, religious, and tribal strife between different groups.' ⁶ Regardless of the levels of intensity, over time, urban operations are becoming increasingly difficult due to the multi-dimensional nature of the terrain and the seemingly unstoppable urban congestion. ⁷

Members of the 1RAR Battalion group in Somalia in early 1993 and the Australian Medical Support Force to UN operations in Rwanda in 1994-5 would appreciate the chaos, complexity, and concurrency, General Krulak conveys. They would also appreciate the need for the Australian Army to prepare for the challenges of a diverse range of situations in urban operations. This paper underscores the relevance of the concept of the *three block war* in the Australian strategic context in the first half of the 21st Century, in an attempt to learn from US lessons and observations.

AIM

This paper seeks to draw a number of relevant lessons from recent USMC and US Army initiatives, and the author's experience as an Australian Army ABCA Standardisation Representative ⁸ in continental United States (CONUS). This endeavour is intended to provide observations and insights within each of the Australian Army's approved capability elements. ⁹

PEOPLE: LET'S WORK TOGETHER!

The Army's keystone doctrinal publication, *Land Warfare Doctrine 1: The Fundamentals of Land Warfare* (LWD1), makes a concerted effort to enunciate a philosophical approach to how Australians conduct military operations. LWD1 describes soldiers as the Army's scarcest and most valuable resource.¹⁰ Yet, the dilemma Australia faces in urban operations is that more – not less – manpower is generally required.¹¹ Australian political and fiscal realities indicate that a significant increase in manpower is unlikely to occur, short of involvement in a major conflict. Therefore, the Army's future approach to urban operations and the *three block war* must be smart and focused, without relying on increases in manpower to overcome current deficiencies. The Australian Army must be capable of operating across the range of urban environments, and types of conflict characterised as urban operations – both regionally and in the wider global arena.¹²

The US Army and the USMC have struggled over recent years to develop an holistic approach to urban operations. The immediacy of the task has come from pressure from the US people, and Congress, to reduce casualties in urban operations.¹³



Photo Courtesy: Combat Camera, 2nd Marine Division

The following quote from *Blackhawk Down*, commenting on a US Army debacle in an urban operation in Somalia, is often employed by the USMC Warfighting Lab:

How is it that a nation that could land an unmanned little go-cart on the surface of Mars couldn't steer a convoy five blocks through the streets of Mogadishu?

Mark Bowden, *Blackhawk Down*

The US Army and USMC have taken a number of initiatives to improve their operational effectiveness in urban operations, and specifically in military operations in urban terrain (MOUT). The MOUT Advanced Concept Technology Demonstration (ACTD), Combined Arms MOUT Task Force, and the USMC Warfighting Lab's *Urban Warrior* phase of the *Sea Dragon* series of experiments are some of these. The Australian Army has continued to keep in touch with developments in CONUS and has a better understanding of US programs than most. The Australian Defence Organisation has made a significant contribution – especially to USMC experimentation, where they are best able to provide intellectual *horsepower*.¹⁴

Where the Australian Army can take a 'people' lesson, in terms of achieving the dynamic of synergy, is through employing the US technique of *proponency*.¹⁵ After all, the key to urban operations, as the Russians learned in Grozny, is not only about massing combat power but more so about commanders and soldiers employing their intellectual effort to overcome their deficiencies in an efficient and productive manner – each member of the group working in the same direction in a coordinated and resourceful manner.

Proponency is all about giving a group of people the charter to further a cause and the resources to develop a network of stakeholders,¹⁶ in order to shape the future. Currently, if one were to ask, 'Who has the lead for urban operations in the Australian Army?', many answers – none convincing or over-arching – could be offered. A critic might ask, 'Why would urban operations require this special attention?' Well, urban operations may be an appropriate exception. The Australian Army's critical deficiencies in this environment, across all the POSTED capability elements combined with the increased likelihood of urban operations, should provide ample justification.¹⁷ Additionally, most other 'special' or 'hard-to-do' missions are already being fostered – either formally or informally – within the Army or the ADF. The Army's ability to succeed in the urban environment will require interest and effort across functional commands, units, corps, and in many cases it will require a Joint perspective.¹⁸ But, like most important challenges, someone must take the lead and forge the path ahead.

Who then should be the Australian Army (and perhaps the Joint) *proponent* for urban operations? Within Land Command, there is significant user interest in urban operations in both the 1st and 3rd Brigades. Similarly, Training Command's, Combined Arms Training and Development Centre (CATDC) and Army Combat Arms Training Centre (ACATC) would see themselves as important stakeholders. And clearly, Support Command has much expertise to offer in many areas such as the life-cycle costs of equipment and facilities. Or, should a discreet Australian model of the US Army MOUT Task Force be established? A final answer to this question would require much analysis, but the salient point is that one group must have the lead in order to develop the Army's capability to win the *three block war*. The *proponency* model is one suggestion.

ORGANISATIONS: WHAT ABOUT THE ARMS ROOM APPROACH?

Recently, several of the Program Managers from the US Infantry's Directorate of Combat Development (DCD) have made reference to a 'new' concept to changing organisations for the *Light Forces* in order to maximise combat power: the Arms Room approach. The hypothesis is that Ranger and Light Battalions are optimised through holding man-portable or towable, 81 mm **and** 120 mm mortars not just one **or** the other.¹⁹ This innovative concept appears to have excited the US Infantry into realising a number of benefits with minimal detriment. The Arms Room approach is under trial by the US Army and is currently limited to the mortar platoons of the Ranger and Light Battalions. The benefits and challenges of this approach are worthy of another paper; but, suffice to say, many in the US Infantry are so excited that they are calling for the trial to be concluded and the Arms Room approach introduced into all appropriate organisations without delay. The excitement is mainly over the flexibility the approach offers in terms of available range ammunition types,²⁰ lethality profiles,²¹ and man-portability.

The Arms Room concept may have even wider application in Australian units employed in a *three block war* given the diversity of likely tasks, operating environments, and the lack of single mission units available. At light infantry battalion level, the Arms Room concept is already in place with direct fire support (despite critical deficiencies in adequate weapon systems or firing platforms) and assault pioneer platoons. In addition to the mortar platoons, another obvious candidate for this innovative approach is the battalion's sniper section.²²

The Arms Room approach could realise the greatest benefits at the company, platoon and even section levels of our infantry battalions.²³ One manifestation of the current need for the Arms Room approach is the continued professional debate over a perceived conflicting operational requirement between the general purpose machine gun (GPMG) and light support weapon (LSW). The debate has raged since the withdrawal of the heavier weapon from rifle platoons (and rifle companies in some cases). One proposal is to make both types of weapons available to companies before deployment and allow the commanders the latitude to make the decision on what should be carried, using the mission analysis process.²⁴ At the lower levels, the Arms Room approach relates to a mixture of weapons and munitions – both lethal and non-lethal – needed for urban operations.

The Arms Room approach does have limitations²⁵ but, overall, appears to have much to offer the Australian Army. The Light Infantry, in particular, would realise great benefits if it moves from the out-dated paradigm of 'one man-one weapon'.²⁶ The USMC catch-cry of 'Equip the man; don't man the equipment' provides a clear lesson for the Australian Army as it looks to the 21st Century.

SUPPORT AND SUSTAINMENT

The provision of support—or lack of it—can have a dramatic impact on the *three block war*. The USMC *Future MOUT Concept* predicts that 'our CSS [Combat Service Support] system must provide for supply, maintenance, transportation, health service, engineering, and services under special conditions of MOUT'.²⁷ The concept suggests that organic and supporting CSS units must be able to locate and reach dispersed elements of supported units in the 'vertical' urban terrain. Functions that occur routinely under field conditions will take on new dimensions in future MOUT: salvage and repair of armoured vehicles in narrow streets and the evacuation of wounded from multistorey complexes.

The USMC experience occasions issues for consideration by the Australian Army. Has the Army really considered the implications of employing our current range of combat vehicles (M113, ASLAV, or even Bushranger) for urban resupply, command and control, or casualty evacuation tasks? What about providing convoy security/protection in a built-up area? What are the force protection and communications implications? The Army should be reviewing the capability needs for our means of providing support in the urban environment. ASLAV and Bushranger are two examples of where the relevant capability submissions were based on rural—not urban—environments and the implications of *three block war* have not been addressed in adequate detail, for the needs of the 21st Century. To answer these questions and address these issues, the Army must include urban missions when developing issues papers, capability proposals, mission profiles, and training needs analyses. After conducting detailed analysis on the capability requirement in urban operations, the Army might find that tracked vehicles do have an important role in our inventory when protected mobility is paramount, and modifications to our wheeled vehicles are necessary for urban operations.²⁸ At least if the Army knew what had to be completed prior to deploying to an urban operation, it might reduce the time taken to modify vehicles and hence reduce casualties.

To our peril, training facilities are often an afterthought when the Army, in conjunction with Australian Defence Headquarters, develops capability requirements. The Army's capability proposals are often too equipment focused—rather than capability based—and, for a range of reasons, place less emphasis on appropriate training facilities. Urban and night fighting training facilities are two examples of where action has been slow. The development of 'Line Creek Junction' in the Townsville Field Training Area has proved the worth of urban training facilities. If the Australian Army were to take a lesson here, urban training facilities would be built within reach of each major Australian Army concentration. In the Australian context, the deficiency appears to be in the Northern Territory²⁹ and then Puckapunyal—both growth areas for the Army. The US experience indicates that through the instrumentation of 'MOUT villages' the training and capability assessment outcomes achieve more fidelity and hence credibility.

The US Infantry 'Own-the-Night' program of the Dismounted Battlespace Battlelab (DBBL) has developed a world-class *night fighter* training facility at Fort Benning. The benefits of such a facility in developing US Army night fighting capability appears to be extraordinary, given its comparatively low cost. The USMC has not ignored progress in this important area. The 'first sod' for the Marine Corps Combat Development Centre Night Fighting Facility was turned at Quantico a few weeks ago. In the Australian context, most would be aware that Project NINOX is currently introducing into service a range of excellent night fighting equipment (NFE); but the question is—'Are the facilities to support the training adequate?' There appears to be significant justification and precedence for progressing our own night fighting facilities in each of our major Army concentration areas. Advice from the DBBL has been offered to assist the Australian Army in developing like facilities at a much-reduced budget.

TRAINING TO WIN THE THREE BLOCK WAR

The Australian Army appears to be emerging slowly from a long period of apathy toward training for urban operations, in the wake of Australia's involvement in the Vietnam War. Significant progress has been facilitated by an increased awareness of the applicability of MOUT operations to the Australian strategic environment, the establishment of the 'Line Creek Junction' MOUT training facility, and the soon-to-be-issued MOUT pamphlet. The establishment of the ACATC at Puckapunyal is already providing better integration of combined arms training at the tactical level. However, there is much ground to cover before a balanced program could be achieved. Training for urban operations must be viewed in its totality and addressed throughout the Army at the individual and collective level. Urban operations must become part of our operating, exercising, and training environment in the same way as we view open country operations today.

Urban operations should become part of the 'norm' for TEWTS, classroom discussions, cloth-model exercises and other training activities where tactics, techniques, and procedures are taught, rather than a special operation appended to what is often viewed as more serious training. The training vehicle of urban operations is ideal for instilling the 'manoeuvrist' philosophy in our leaders at all levels, and should be employed accordingly. Urban operations training must be introduced early in a soldier's or officer's career, and used constantly when training combat team leaders. A growing range of computer-based training tools and simulations are becoming available, reducing the reliance on urban training facilities.

Urban operations are arguably one of the most difficult in which to achieve proficiency, and this proficiency can only be achieved over a number of training events over a period of years.

Individual training establishments must incorporate the training of lethal and non-lethal training techniques and place an appropriate priority on each of the components of the *three block war*. Above all, training individuals in urban operations requires a coordinated, systematic, and efficient program that is melded into the training continuum.

EQUIPPING THE FORCE

The US Army and the USMC have a staggering workforce of civilians, Servicemen, and contractors working on equipment needs for urban operations. Clearly, the Australian Army is in a different financial paradigm, so it must be more selective acquiring hardware. This paper will concentrate on equipment areas that may offer significant leverage in urban operations: non-lethal, night-fighting, communications, and man-portable vehicle and bunker defeat munitions. However, this paper does not suggest that technology is the panacea for winning—especially against an asymmetric threat. Modern equipment is only one part of the equation that comprises a capability.

Non-lethals are probably the most exciting, yet controversial, emerging capability area. Should the Australian Army wish to take a lead from the US, non-lethals would be considered essential inventory items. Non-lethals provide the ability to significantly reduce—but not eliminate—the probability of injuring or killing personnel over the traditional military 'tools of trade'. The US Department of Defense (DoD) began the Joint Non-lethal Weapons Program³⁰ in 1997 and designated the Commandant of the Marine Corps as the Executive Agent for the Non-lethal Weapons Program. The Non-lethal Warfare Directorate, based at Quantico, is heavily involved in both the US Army's MOUT ACTD and the USMC *Urban Warrior* experiments. A key lesson for the Australian Army is the need for developing what the USMC calls 'Non-lethal Capability Sets'

— a pre-packed collection of protection items, non-lethal munitions, training items, and miscellaneous stores. The USMC Military Expeditionary Unit (MEU) Special Operations Capable (SOC) would not deploy without them, although they are considered nothing more than another 'club in the golfbag'.

Now that Project NINOX is in the process of delivering an excellent range of image-intensification (I²) based NFE and is progressing later phases involving thermal surveillance systems (TSS), Leopard tank thermal sights (LTTS), and Ground Surveillance Radar (GSR), many would assume dismounted soldiers will have adequate means to fight at night. This is not the case in all environments. Unfortunately, buildings and jungles share a common problem when it comes to I² devices. There is often too little ambient light to allow them to function in a passive-only mode. The US Army and more recently the USMC have recognised this deficiency in their ability to carry out urban operations, and — without waiting for Land Warrior to mature — have commenced a rapid acquisition of thermal weapon sights for many of their individual and crew-served weapons. The other lesson available for the Australian Army — also in relation to the introduction of NINOX NFE — is the sudden desire for large amounts of infra-red illumination to make the best use of I² technology, in the place of white light illumination. Operations at night in the urban environment have changed; so must the Australian Army.

One of the major outcomes of the USMC Urban Warrior AWE was the effectiveness of commercial-off-the-shelf (COTS) intra-squad communications in the *three block war*. The Marines found that with the benefit of relatively inexpensive intra-squad radios³¹ — especially with a workable headset — they became more survivable; and were capable of inflicting higher casualties on the opposing forces. ADF's Land 125 Field Studies have made similar conclusions. Land 125 has gone further to include the importance of the confidence factor that intra-section radios introduce; especially when teamed with thermal weapon sights. The USMC is about to embark on a rapid acquisition program for intra-squad communications that they believe will make a significant difference to their performance in urban operations. There is a lesson here for the Australian Army.

The US Army and the USMC are in the process of converting their Dragon gunners to fire the latest, and many would say the greatest yet, man-portable 'fire-and-forget' bunker-defeating and anti-armour system. The 1999 US Army Infantry Conference, 1999 US Army Armour Conference and the 1999 National Defence Industry Conference, had a number of common threads. One was the success of *Javelin* and the impact this revolutionary capability will have on the modern battlefield. In the Australian Army's version of the *three block war* where distances are likely to be greater and the vehicles are likely to be lighter and more mobile, we should be taking some notice of US man-portable, low back-blast danger area (BBDA), missile developments.

The aforementioned examples are equipment areas where major reform is necessary in order to achieve some level of overmatch with possible adversaries in our region. More accurately, all current equipment must be reviewed to determine its suitability for urban operations from individual load carriage equipment, to personal protection kits, to larger platform focused systems. A number of current capabilities have severe limitations in the urban environment; and, the Army should be at least in the process of identifying weaknesses, and then prioritising possible purchases should funds become available.

DOCTRINE: WHAT ABOUT THE X-FILES?

To the credit of the Force Development Group, CATDC and others, the Army is in the process of finalising the MOUT pamphlet; and, it is an impressive attempt to cover the fundamentals of MOUT in one document. The USMC Warfighting Lab has taken a different approach to solve the vexed problem of current and future MOUT doctrine and emerging concepts. The Lab has commissioned a series of short and easily consumed booklets in order to facilitate the *Urban Warrior* experiments. Known as the X-Files, they are available on the World-Wide Web³² and are promoted as being 'Marine-friendly'. Great lengths are gone to to explain that the documents are not approved doctrine; only a collection of the current thinking of Marines involved in urban experimentation and their suggested lessons. The benefits of this approach are the speed by which publishing and distribution occurs, as well as electronic doctrine availability to a cross-section of Marines who have access to a phone line and a computer. Additionally, Marines are encouraged to comment on the current X-Files and offer their ideas—in a chat-line style—in order to both improve the product and create greater corporate ownership of the output. The X-Files may have been accessed by many Marines afloat, prior to the recent MEU (SOC) deployment, into a potential *three block war* in Kosovo. Again, there is a lesson here for the Australian Army.

CONCLUSION

The Asia-Pacific region—along with much of the world's surface—is undergoing a gradual, but certain, move to greater urbanisation. General Krulak's legacy of the *three block war* must not be ignored by the Australian Army. Lessons from the USMC and the US Army are grave in their warnings and numerous in their detail. The common thread is that, in the future, urban operations will become increasingly difficult and more prolific. In order to prepare for the future, the Army must make a concerted effort across the capability elements (POSTED) to address this area of significant deficiency.

The most fundamental and cost effective reform is gaining awareness of the requirement to prepare for the *three block war*. The tool of *proponency* is one method of grouping our people's 'intellectual capital' to devise innovative and cost-effective solutions to our capability needs in the area of urban operations. *Proponency* may be able to assist in synergising a team approach to winning the *three block war*.

The US Infantry's Arms Room approach appears to have much merit for the US Army *Light Fighters*. In the Australian context, the Arms Room approach may have even more relevance on account of the multi-tasked nature of our units and the competence of Australian soldiers.

The Army's change in focus in this post-Cold War environment suggests that analyses needs to be conducted, in order to determine the suitability of the Army's major equipment for urban operations in a *three block war* environment. Issues such as force protection, command and control, and casualty evacuation in the urban environment must be studied; and links with US initiatives must be maintained.

Urban operations facilities are vital for both training and capability assessment. With greater instrumentation, the training and experimental outcomes can be maximised. Based on the US experience of locating MOUT facilities near a number of large US Army and USMC bases, there is some justification for additional 'MOUT villages' in Australia — with the Northern Territory and then Puckapunyal identified as two potential sites.

Training to win the *three block war* at both the individual and collective level must be reviewed in an holistic fashion in order to incorporate urban operations into the Army's mainstream range of courses, exercises and other training activities. Combat team leaders must be sufficiently adept at operating in the urban environment to be able to employ intuitive decision-making techniques. A growing range of computer-based learning tools and simulations are becoming available to facilitate the transfer of the necessary skills, knowledge, and attitudes needed for proficiency in the urban environment.

The chaos, complexity and concurrency, typical of operations in the *three block war*, demands a broader range of technologies and equipment in order to achieve mission success. The Army should be concentrating on the high pay-off areas in order to make best use of limited resources. Should trends in the US be seen as relevant, the Australian Army focus might include non-lethals, thermal weapon sights and infra-red illumination, COTS intra-section communications, and low-BBDA 'fire-and-forget' missiles.

In terms of doctrine, the Australian Army is fortunate to have available a number of lessons from the US. The most striking is the need for low-order doctrine, especially in the area of tactics, technology and procedures (TTPs). The USMC X-Files are not perfect but offer an approach that may be of significant benefit to Australia.

This paper has addressed each of the POSTED capability elements and the author has provided a number of lessons, observations, and insights, taken from his exposure to the US Army and the USMC over recent months. Should the Army be determined to address urban operations with the level of intensity it deserves, all the capability areas must be addressed, in order to optimise the outcomes.

The *three block war* will not disappear into obscurity. Urban conflict is on the increase and will only become more prolific as populations living in the towns and cities of the world increase and the land area available for other uses dwindles over time. The Australian Army is fortunate to have the benefit of lessons from the US in the subject area of urban operations and is well advised to take notice before the Australian sequel to *Blackhawk Down* is written. ✕



Courtesy: Marine Corps Warfighting Lab.
See - <http://www.mcwl.quantico.usmc.mil>

ENDNOTES:

1. General Charles C. Krulak in 'From the Commandant's mouth to Marine's ears', *Navy Times*, 19 Jan 98; claimed to be said by Varus after his column had been defeated by German warriors using innovative tactics and weapons.
2. This essay uses the more general term of urban operations—as distinct from military operations in urban terrain (MOUT)—to account for the broader actions of the military, belligerents, civilians, other government, and non-government organisations (NGOs), and others, party to actions in the urban environment.
3. Krulak, General C.C. *United States Marine Corps Warfighting Concepts for the 21st Century*, Concepts Division, Marine Corps Combat Development Command, Quantico, p. VII-6.
4. John G. Roos, quoting General Krulak in: *Armed Forces Journal International*, 'Changing the heading: USMC Commandant puts training, modernization efforts on 21st Century course' Jan 98, p.1 of 5 found at <http://www.mcwl.quantico.usmc.mil>.
5. Colonel T. Seal, (USMC), from a presentation given to an International Conference on Disrupted States, Canberra, Jul 99.
6. *Ibid.*, p. 1 of 5.
7. From comments made by Colonel S. Quinn, CSC, on an earlier draft of this essay.
8. American British Canadian and Australian Armies (ABCA) Standardisation Program. For more details on the ABCA Program see: <http://www.abca-armies-program.org>.
9. *Land Warfare Doctrine 1: The Fundamentals of Land Warfare (LWD1)* describes the capability areas as: **People, Organisation, Support and Facilities, Training, Equipment, Doctrine** (using the acronym of POSTED).
10. *LWD1*, Op Cit., pp.5-10.
11. The Russians when attacking Grozny worked on a ratio of 5:1 in their favour and found that not only did they suffer many casualties but were repulsed in a number of actions.
12. This is not to suggest the Australian Army is likely to become involved in sustained major conflict outside our region in the near term. However, the Army could be involved in urban operations outside our region—as it was in Somalia in 1993—and should not be too regionally focused in this regard.
13. The 'CNN effect' has done much to create the 'zero casualty' culture in Western militaries.
14. For example, during the USMC Warfighting Lab *Urban Warrior* Advanced Warfighting Experiment (AWE) the Australian Army and Defence Science and Technology Organisation (DSTO) provided nine subject matter advisers/analysts.
15. *Proponency* implies the responsibility for fostering the broader picture without having executive authority to change funded programs, although a *proponent* does have authority to work across chains-of-command in order to achieve the greatest level of technical input into major capability areas.
16. *Proponency* also implied the responsibility of coordinating stakeholder input and marketing the cause. The USMC are probably the best at doing this; much of the *Urban Warrior AWE* was about selling the importance of the urban operations challenge, and thus the funding needs, to US Congress.
17. The US Army and the USMC are extremely concerned by the likely casualty rates in urban operations; and this had provided some of the urgency for a focus on MOUT.
18. The USMC has the *Joint proponency* for MOUT in the US. The Army has raised the MOUT Task Force and ACTD to provide the Army input.

19. During the 1999 US Infantry Conference, the Arms Rooms approach was briefed as an innovative solution to solving the dilemma between which mortar is best for light forces. It assumes that two or three calibres of mortar could be issued to the same unit and employed in whichever combination they believed would achieve their mission. The Arms Room approach relies on a system where many of the components (sights, fire control system, command post procedures etc) remain the same. The barrels, ammunition, etc would vary according to mission needs.
20. The inclusion of 120 mm mortars allows for the employment of precision-guided munitions (PGMs) and a wide range of other lethal and non-lethal pay-loads.
21. For example, the fragmentation danger area of an 81 mm high explosive round is dramatically smaller than that from 120 mm munitions. The implications for covering fire and defensive fire safety distances are similarly relevant.
22. The inclusion of the 12.7 mm Anti-materiel Rifle, in addition to the current 7.62 mm Sniper Rifle, will provide a significant increase in capability.
23. Some would argue the Arms Room approach is optimised for the urban fight at the lowest levels.
24. Depending on the role of the unit and the mission at hand, surplus weapons could be held either in F Echelon vehicles, A or B Echelon, or left behind in the armoury.
25. They are mainly in the areas of resources, logistics and training. The US has been successful when much of the equipment is the same (sights, fire control system, charge bag configuration etc) and the training regime based on very similar operating systems and procedures).
26. Many 'olds'n'bolds' will recall a number of examples of where the infantry has employed the Arms Room approach in the past. Our current deficiencies are more likely fiscally induced rather than due to the inability of Infantry to be flexible.
27. *USMC Warfighting Concepts for the 21st Century*, Op Cit., pp. VII-16.
28. Informal advice received indicated the 5/7 RAR Tracked Load Carriers (TLCs) proved to be an indispensable CSS asset on the recent Exercise CROCODILE WEST 1999, outperforming wheeled first line CSS vehicles on a number of significant occasions.
29. Perhaps a *mounted manoeuvre* MOUT facility, similar (but at a smaller scale) to what is being constructed for the US Army Armor Center at Fort Knox, KY would be most suitable in the Darwin area.
30. US DoD Joint Non-Lethal Program Pamphlet dated Feb 99, p. 2. More information is available at: <http://www.marcorsyscom.usmc.mil/nlw.nsf>.
31. The model they employed cost approximately US\$60 per item.
32. See: <http://www.mcwl.quantico.usmc.mil>.

BIBLIOGRAPHY

Burr, Richard, 'Maneuver warfare in the urban environment', USMC School of Advanced Warfighting submission, 27 May 99.

Fuentes, G., 'From the Commandant's mouth to Marine's ears', *Navy Times*, 19 Jan 98.

Geibel, A., 'The final score: Russian Armor losses in Chechnya reflect lethality of an urban fight', *Armor*, May-Jun 99, <http://www.geocities.com/Pentagon/6453/armor1>.

Grau, L., 'Changing Russian urban tactics: the aftermath of the Battle for Grozny', *INSS Strategic Forum*, No. 3, Jul 95, also [http:// call.army.mil/call/fmso/fmsopubs/issues/grozny](http://call.army.mil/call/fmso/fmsopubs/issues/grozny).

Krulak, Gen Charles C., 'The strategic corporal: Leadership in the three block war', *Marines Magazine*, Jan 99.

Land Warfare Doctrine 1: The Fundamentals of Land Warfare, Australian Army Publication, Published by Doctrine Production, FDG, CATDC, 1999.

Marine Corps University, 'The Battle for Grozny: Russian Army lessons learned', *Marine Corps Infantry Officers Course Newsletter*, <http://www.geocities.com/Pentagon/6453/groznya>.

Mordica, G., 'It's a dirty business, but someone has to do it', US Army Center for Lessons Learned, Apr 99, <http://call.army.mil/call/trngqtr/tq4-99/mordica>.

Roos, John G, 'Changing the heading: USMC Commandant puts training, modernization efforts on 21st Century course' *Armed Forces Journal International*, Jan 98.

Seal, Col (USMC) T., 'Managing chaos: USMC 2030', presentation to the International Conference on Disrupted States, Canberra, Jul 99.

Thomas, T., 'The Battle of Grozny: Deadly classroom for urban combat,' *Parameters*, Summer 1999.

United States Marine Corps Warfighting Concepts for the 21st Century, Concepts Division, Marine Corps Combat Development Command, Quantico, 1996.

BIOGRAPHY

Lieutenant Colonel Steve Tulley is currently posted as the Australian Army ABCA Standardisation Officer to the USMC, and the US Army Infantry and Armor Branches, based at Quantico, Virginia, USA. He is a graduate of British Army Staff College, Camberley; the Royal Military College, Duntroon; and the University of New South Wales. He is nearing the completion of a Master of Arts in International Relations through Deakin University.



BY LIEUTENANT COLONEL W.R. VICKERS

Force without wisdom falls on its own weight

Horace from Odes

INTRODUCTION

The US Army has realised for some time that the mixing of light and heavy forces provides much flexibility to a combined arms teams. The light-heavy integration concept¹ has been trialled at the US Army National Training Centre and has been so successful that proposals have been made to increase the scale of integration by permanently changing the structure of some heavy divisions to two heavy brigades and one light. While logic dictates that this should happen immediately, traditional pressures and a lack of an overarching concept to reinforce the proposal have prevented this from occurring – until the Strike Force concept was formed.

AIM

The aim of this paper is to explain the genesis and planned roll out of the newest version of manoeuvre warfare – its concepts, its end state, and the outcomes required as the US Army continues a transformation begun in the mid 90s. It will show that the Strike Force concept has been around for quite a while, albeit in different packaging. But, Strike Force is not only a concept and an objective, it is also a process and an agent for change. The paper questions whether or not it will be successful this time, and includes some observations and possible effects that the newest Strike Force will have on both the US Army and on forces that it will come in contact with in coalition, including those from Australia.

BACKGROUND

The US Army is changing again. The current modernisation process was begun in 1995. Termed Force XXI, it is leveraging Information Age technologies to provide a platform enhancement program and a tactical internet for its experimental forces, 4th Infantry Division (4th ID), part of the 3rd Armoured Corps. Force XXI provides a degree of fidelity of friendly force dispositions unheard of 10 years ago. Through an integration process called *spiral development*, teams of 4th ID soldiers have been working with contractors, force developers, program managers, and doctrine writers. The aim was to acquire a capability to establish, refine, and demonstrate a common operating picture to every platform and unit within the formation's tactical operating area. At a glance, each platform or crew-served weapon saw where it was, as well as where each of its adjacent platforms, various unit headquarters, supply and ammunition points etc

were. Through an intelligence cell linked to all these units and other sensors, a credible near-real-time picture of the enemy was also developed.

The end result has been a transformation of the armour and mechanised forces of 4th ID into a powerful, synergistic heavy punch, theoretically capable of defeating formations at least equal, and up to three times its size, then re-forming on the move and re-deploying without pause. The Force XXI experimentation demonstrated the power of battlefield situational awareness using information age technologies. Those technologies have also transformed the layout, tempo, data flow, and functions performed within the conventional command post, as well as the roles of the leaders and staff working within.

As insights turned to realisation and the technologies matured from prototypes to fielded versions, the light forces (infantry, airborne) requested similar benefits to increase both the lethality and the survivability of their soldiers. The results from light force experimentation have not been as dramatic nor conclusive. While some technologies were not yet robust enough, others that provided a potential advantage had weight and power consumption challenges that detracted from their benefit to the soldier who inevitably had to carry them. The clear winners were HIMARS and LOSAT², but many capabilities are still being analysed.

Force XXI has produced some great force multipliers. Nevertheless, the light forces still lack mobility and survivability against potential adversaries with motorised or mechanised forces, and the US heavy forces are still enormously dependent on fuel supplies and other agencies' lift capabilities. It seems that the heavy forces need to be lighter and the light forces need to be more survivable.

THE ORIGINAL STRIKE FORCE(S)

In the late 70s when the Air Land Battle concept was still struggling for acceptance³, the Army staff had analysed the disadvantages of their force structure and set up 2nd Division (Div) as an experimental force. 2 Div, although powerful enough, was too slow to deploy and too cumbersome in its structure. It was redesigned to test concepts of fast-paced operations outside Europe that would demand a lighter, more flexible, more deployable Army.⁴ Sound familiar?

In the early 80s, 9th Div in Fort Lewis was redesignated a high-technology division. Its role was to assess new capabilities required of a warfighting headquarters to gain operational advantage through speed, mobility, and firepower. Sound familiar? Unfortunately, some of the capabilities tested were too radical for the Department of Army staff of the day, and they unkindly designated the units the 'Toys Are Us' division.

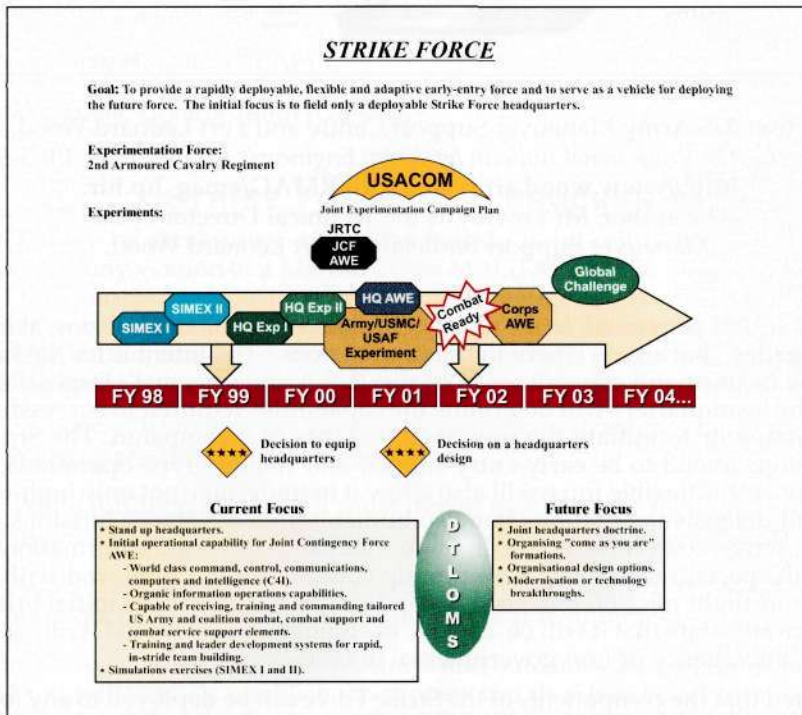
These projects faded away for many reasons. Firstly, no new concept of operations existed to embrace this fast-paced requirement. Secondly, while the local commanders' approaches were innovative and imaginative, no disciplined analysis was conducted to reach conclusions nor any deliberate methodology employed to decide the products to be tested. In short, the approach was inspired rather than methodical; unfortunately geared to superficial analysis to support the 'dune buggy' outcomes. So the high-tempo mobile units disappeared and the Army of Excellence (AOE) – the product required to support the Air Land Battle concept – moved forward to the 90s and into its first real test: DESERT STORM.

Even before any of the Force XXI initiatives had been conceived, military forces around the world watched and learned from the events leading up to and during execution of DESERT STORM. The US took 18 days to deploy a heavy brigade for DESERT SHIELD. Even though the US and coalition forces had an overwhelming overmatch in terms of capability, the heavy, well-protected forces still took 60 days to set up for the ground battle. Future aggressors would certainly deny the US the luxury of building up forces

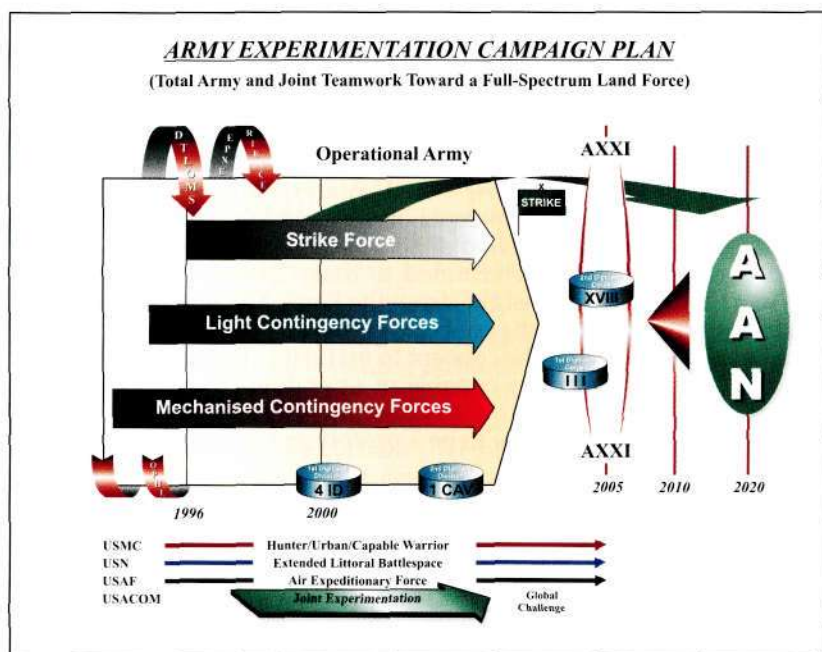
as the Iraqis did in 1990, never again would a potential adversary allow the US to set the conditions or the terms for a fight. General Reimer, former Chief of the US Army, has stated the obvious, 'DESERT STORM showed us we had to change'⁵.

STRIKE FORCE CONCEPT

The modernisation process is, in one sense, modernising weapons, platforms and structures that were designed for concepts of the Cold War. While the modernisation process continues, the new Army Chief of Staff is comfortable with the transformation from AOE to Force XXI, but is determined to make the heavy force lighter and the lighter force more lethal. All the insights from the Force XXI process gave form to a new concept of a 'Strike Force'. While the concept is still in its infancy, a three-pronged strategy has been developed to bring the concept to maturity. The first task is the creation of a Strike Force headquarters that is capable of operating over the entire spectrum of military operations. The second is to act as a leader development laboratory. The third enabling task is to allow Strike Force to be a prototype for Army After Next (AAN) organisations.



From: US Army Maneuver Support Centre and Fort Leonard Wood,
Engineer – *The Professional Bulletin for Army Engineers*, August 1999, PB 5-99-3,
http://www.wood.army.mil/ENGRMAG/emag_hp.htr.
The author, Mr Lowrey, is the Technical Director of the
Maneuver Support Battlelab at Fort Leonard Wood.



From: US Army Maneuver Support Centre and Fort Leonard Wood,
 Engineer – *The Professional Bulletin for Army Engineers*, August 1999, PB 5-99-3,
http://www.wood.army.mil/ENGRMAG/emag_hp.htr.
 The author, Mr Lowrey, is the Technical Director of the
 Maneuver Support Battlelab at Fort Leonard Wood.

With 3 000 – 5 000 personnel, strike forces are relatively small in US terms, akin to Australian brigades. But size is where the similarity stops. The intent is for the headquarters to pick its units and capabilities from the, 'US Army's arsenal'. Depending on the mission, the headquarters will determine the capabilities required to successfully complete a mission or to initiate the preliminary stages of a campaign. The Strike Force main missions intend to be early-entry combat and stability type operations. But the very nature of this flexible force will also allow it to undertake not only high-tempo offensive and defensive operations but also humanitarian assistance missions. Selected units from active, reserve, airborne, light, mechanised, and armour formations, or personnel with specialised skills will be rapidly concentrated or deployed with in-flight updates or in-flight mission rehearsal to conduct an operation. The initial briefings on Strike Force also state that it will be 'capable of commanding⁶ selected Army, joint, multinational, interagency or non-governmental organizations⁷'.

It is expected that the components of the Strike Force can be deployed to any location in the world within 96 hours, with enough lethality and mobility to seize the initiative before an adversary can set. It envisages conducting its mission by leveraging technology to introduce communication suites that will have global access – not a bad start for a brigade-size headquarters. The use of the traditional continental staff system – S1/G1, S6/G6 – will also be investigated and may be replaced with a node-based organisation. The logistic footprint is also to be reduced, partly through split-based operations with reach-back facilities, as standing operation procedures to reduce in-theatre presence.

To draw some boundaries around the look and feel of a possible Strike Force, table 1⁸ provides an early indication of the range of capabilities required.

TABLE 1.

| STRIKE FORCE CAPABILITIES | |
|---|------------------------------------|
| 2 X Light Cavalry Battalion | |
| Air Assault Light Infantry Battalion | Mechanised Battalion |
| Combat Aviation Battalion | |
| Engineer Battalion (+) (combat and civil) | Chemical/Biological Response Team |
| Mobile Rocket Battalion | Target Acquisition Battery |
| Military Police Battalion | |
| Civil Affairs Company | Psychological Operation Detachment |
| Intelligence Interrogation Team | |
| Air Transportable Hospital (USAF) | |
| Weather/Air Traffic Control Team (USAF) | |

STRIKE FORCE AS A PROCESS

While there may be similarities, advocates quickly point out that the Strike Force is more than an Army version of a Marine Corps MAGTAF or MEF⁹. General Reimer had described the concept as a 'cost effective means of changing, ...using experimentation... to be a bridge between the heavy and light units'¹⁰. While in the end it will be an authorised formation and have an order of battle (orbat), platforms, and people, currently it is an agent and a process for change. This process has three objectives:

- * Primarily, it must meet near-term peacetime strategic engagements while meeting readiness requirements.
- * While fulfilling that role, it must devise new training methods, identify new leadership skill sets, and devise, if necessary, new soldier structures (ECN).
- * As with all Army-wide initiatives, the Strike Force process must meet long-term doctrinal, organisational, and material requirements.

The timelines created for delivery of products and outcomes are ambitious but deliberate. TRADOC will initially establish the process and then hand over to an operational unit, 2nd Armoured Cavalry Regiment (2 ACR)¹¹. The near-term focus is to establish a Strike Force headquarters (HQ) capable of achieving command and control of its designated units. This year has seen the establishment of a coordination cell — termed the Experimental Coordination Cell (ECC)—and an HQ cadre (35 personnel) at Fort Polk, Louisiana. It is similar to the Digital Force Coordination Cell (DFCC) set up at Fort Hood for the Army Warfighting Experiments¹². During 1999, a series of 'rock drills'¹³ for the HQ will be conducted. For instance, in the spring of 1999, a series of vignettes and event messages were issued at Fort Leavenworth to stimulate the headquarters (at Fort Polk) to conduct a staff exercise using a constructive simulation.

In the year FY 00, the ECC will draw conclusions and insights, expand the HQ cadre and incorporate the experimental force unit, 2 ACR, into the organisational design by merging the Strike Force cadre with HQ 2 ACR. In January 2000, the doctrine and organisational design efforts will shift from various TRADOC centres to the Experimental Force at Fort Polk where two limited objectives experiments will be executed.

In later years, FY 01-03, the intention is to conduct new equipment training (NET), and work toward an FY 03 threshold capability. This will be achieved by conducting a series of focused NET, to be completed by August 2001, followed by a deployment once in FY 02 in accordance with a regional scenario. The report card is due sometime in FY 03. The choice of these dates is somewhat arbitrary and may change as the pressures of funding and other priorities emerge.

STRIKE FORCE AS AN ENTITY

The Strike Force will be designed to dovetail eventually into the AAN. It will take advantage of what the US Army has learned so far about situational awareness and will link this to the tenets of AAN, which are based upon power, speed, and knowledge gained through informational dominance. The Strike Force will be the testbed for prototype AAN organisations.

The initial headquarters is planned to have a notional organisation, drawn from all areas of the Army and Air Force, of approximately 1 640 vehicles, 4 750 personnel, and 780 sorties, to include logistic support. The aim is to build a multifunction headquarters and employ resident forces as needed.

As stated previously, 96 hours is the objective deployment time for a Strike Force mission. The bulk of Strike Force assets should be at the new location well before that time. To achieve this strategic reach in the specified time, however, some important key capabilities will need to be improved.

Firstly, improvements in strategic and tactical deployability will have to mature. This implies more than the ability to move from the US to an overseas location and the deployability of the combat forces. It requires that sustainability elements be reduced in size, weight, and manpower to operate and move the force. The processes have to be found to rapidly form a hybrid force, deploy it, conduct en route rehearsal and first operation, change the variables, employ better mission planning tools, rehearse a new plan, and conduct the next operation/phase with distributive communications links.

Secondly, industry will be encouraged to invest research and development in the Future Combat Platforms (FCP). They will have to be smaller, lighter, and have better lethality, but will have to have first-round survivability of the crew. The FCP will probably be a family of platforms, not a platform. An objective is to have as few variants—differences not visible to the enemy—as possible. Another objective is to have many common components or modules across the family. Characteristics would probably include most, if not all, of these parameters: 20 ton (fit in C130-J); 200 per cent increase in mobility, 90 per cent reduction in overall sustainability (fuel reduction, reliability improvements etc); double the lethality, 'scalable for environment'¹⁴; and, finally, better tools for information management and data transportability. Of the 300 personnel in the current Digital Divisional HQ, almost 40 per cent are involved with the collection, transformation, and transportation of data from various field sensors into a usable form onto the screens. This number has to be reduced so the staff can see the present (common operational picture) and, with confidence, visualise the future.

IMPLICATIONS FOR THE ADF

The US Army, through this new formation, is now serious about operating in a Joint environment. The HQ will do the planning, but with no assigned troops it will then conduct the coordination and tasking from units and personnel from various military capabilities. The generic list of capabilities from table 1 underscores the point that the Strike Force HQ will request any unit from any Service if it deems it suitable for the mission profile. While Australia publicly asserts its joint capability, robust evidence to show true joint planning and conduct in, for instance, Directorate Joint Force Headquarters (DJFHQ), is not readily apparent. Australian HQs are not really equipped or capable of commanding Joint forces just yet. The evidence must match the rhetoric.

Implicit in the mobility characteristics and the lead role to be taken by Strike Force for early entry or stability forces (global reach to any part of the world in 96 hours) is the fact that the Strike Force will routinely operate in a combined environment, either within a long-term alliance framework or with short-term coalition assistance. The obvious implication is that coalition operations will be *de rigueur*. The Australian Defence Force (ADF), which now espouses regional and some global interests, must therefore commence the restructuring and retraining of its HQ staffs to make room for allied involvement, not just with allowance for foreign liaison officers but within its contingency planning. Establishment of liaison teams and fly-away advance parties will become the normal sequence of mounting operations if the ADF is to work with a Strike Force.

The US Army has broken its mantra of 'fight as you train' or 'train as you are going to fight'. To date, units have been task-organised into functional groups and have trained together to achieve some symbiotic benefits. Now, the US Army is stating that the new mode of operation will be for the permanent Strike Force HQ to draw together units with varying degrees of readiness. As they are drawn together, the HQ will fine-tune an ad hoc command and control relationship with the units. The Army will need to determine some new ways of training units, whether in isolation or with their parent HQ. However a unit trains, it can now expect to be assigned to another HQ for deployment. Simulations and staff rehearsals seem the most appropriate ways to familiarise units with their new mission commander. Do Australian headquarters regularly practise staff simulation exercises with their own units? Do they rehearse with attached units? Are liaison teams identified for early sequencing in the movement tables?¹⁵ As satellite communications become reality, are brigade HQ ready for the implications of regional reach or reach-back? Are split-based operations being analysed for their resource and training implications for the Australian Army?

Last year, when William Cohen visited Australia for high level ministerial talks, he commented that 'Australia was in danger of falling so far behind American technology that its ability to participate in Joint operations could be undermined'¹⁶. While he was speaking in a broader technology sense, in the simulation world this is self-evident as the ADF has little in the way of operational level network simulations. The ADF's Simulation Master Plan, in draft since 1996, was last year rejected by the Australian Defence Capability Committee (DCC). Still no policy exists to mandate the effective networks that would allow Service HQ and Joint HQ to practise operational level activities. This has important implications if the ADF wants to work with the US Strike Force. How can it effectively participate with the Strike Force if it cannot, in the first instance, participate in the simulated rehearsals? The Strike Force will be reluctant to work on operations with any force with which it has not trained, even if the only training undertaken was in a simulated environment.

The whole imperative of 'leader development' is to be addressed under the Strike Force. This is akin to the 'P' in the Australian capability elements POSTED. Anecdotal evidence suggests that the traditional roles of command post operators, HQ duty officers, and commanders are sometimes blurred when tasks are undertaken in a digital command post. The project will look at the skill sets needed for a Strike Force HQ leader and determine if a new way of training leaders is required. Another of the tasks to be scrutinised under the Strike Force auspices is the role of leaders—officers and NCOs—in an operational setting. Furthermore, under the Force XXI process, there was widespread concern that only those leaders posted to the digitised elements of the 3rd Armoured Corps would be familiar, trained, and prepared for the leadership tasks demanded in a digital environment. Much credibility and tradition is at stake if these aspects are not analysed carefully and objectively. Is Joint Education and Training (JET) for the ADF or Command and Staff College for the Army reviewing the skill sets needed by staff officers in variously configured headquarters?

The Strike Force will also address the roles of leaders in 'complex' terrain. While operations can be at the high end of the conflict spectrum, they are just as likely, given recent deployments, to be characterised as stability operations, peacekeeping, and humanitarian assistance. All these are at the lower end of conflict and mostly within, or with elements operating within, an urban setting. General Krulak, the former USMC Commandant, characterised this facet when describing the complexities of fighting in a 'three-block war'¹⁷. Operating at the lower end of the conflict spectrum in no way removes the hazards of leadership; indeed, it places much greater demands on the junior leader and his section, squad or platoon. This issue should be given priority under the Strike Force process. Australia has prided itself on its junior leadership capabilities. The Australian Army should closely monitor the complex terrain developments that the Strike Force engenders.

With the recent conflict in Kosovo, many saw the deployment of Task Force (TF) Hawk as an embryonic illustration of what a Strike Force may look like. The EUCOM HQ conducted the analysis and was granted Apache helicopter support and MRLS from Fort Sill (they were the most modern variant). Despite some quick backtracking, the very publicly acknowledged poor readiness levels of the Apache pilots are being analysed. They were from the European theatre and should have been better prepared. Soul searching will continue to determine if the problems with TF Hawk were a readiness issue or a problem with the ad hoc nature of bringing units together that had not previously worked or trained together.

CONCLUSION

The Strike Force is, on one level, all about the process to transform the US Army from the Industrial Age to the Information Age. It will create a command and control HQ designed to lead a more adaptive force for the post-Cold War period. While the focus will be on command and control capabilities, it will be designed and configured from the outset to work in both a joint and a coalition environment. This is a large step forward, tacitly acknowledging that coalition operations will be the defacto standard mode of operations in the future. The US is preparing the groundwork to restructure their forces for that future.

On another level, an opportunity has presented itself to allow the US to address its leader development issues in a non-emotive manner. Certainly, the leader skills needed for the digital battlespace will be different from those required in the Pacific during World War II or in north western Europe during the height of the Cold War. Or will they only be different at the margins? Do the underlying fundamentals remain the same regardless of environment, technology, terrain, or force mix? Emphasis will also be placed on leadership skills needed in complex terrain. This difficult aspect of warfight-

ing will gain the prominence it deserves. These are but some aspects of what Strike Force is certain to address in the leader development laboratory.

The US Army has a mindset that insists that the prominent element for manoeuvre is still the division. This is why it has so much trouble accepting that UK, Canadian, and Australian brigades are twice as capable of independent actions as their US counterparts. The US brigade is still regarded as a manoeuvre element within a broader structure. Numerous attempts have been made to change this mindset¹⁸ but they have floundered through a paradigm of indifference. Therefore, under the Strike Force umbrella, the US Army will look at

...staff functions ... with the idea of trying to get as much out of a brigade-size unit as we currently get from a division today. In other words, ... looking for a three-to-one increase in terms of capability from Strike Force.¹⁹

So, the US Army will analyse possible organisational designs, to move away from the corps and divisional structures, and to look at prototypes for the AAN.

As it becomes self evident that coalitions will be the normal mode of future operations, Australia will naturally monitor US Army Strike Force to ensure it parallels its own force development. But a few factors already place Australia ahead of some Strike Force work and a collaborative effort would benefit both nations. Australian brigades are already trained to conduct independent operations, but lack the lift capability and communications to operate regionally. Australia already has world-renowned expertise in training junior leaders, but the difficulties of operating in complex terrain are still to be identified let alone solved. While Australia espouses a Joint operational context and regularly practises in this mode, experience in coalitions, through exercises or simulations must now be a priority. The Strike Force, instinctively, provides the opportunities, impetus and forum.

The Strike Force, therefore, will be the entity and the process to carry forward the next stage of modernisation. Although still in its early days, the commitment and resources, prudently assigned, show that the US Army is serious about change. Using a disciplined approach, the Strike Force will be that credible change agent. While the idea is not new, the way that the Strike Force has been presented — not only to the army within, but to the other Services and to the public — has given notice to the world that it is serious about global reach, about Joint forces and coalitions, and about a new type of force for security in a new century. ✕

ENDNOTES

1. Eyre, Major W., Canadian Defence, 'Heavy-light integration: Why re-invent the wheel?', *Army Doctrine and Training Bulletin*, Vol 2, No. 2, May 99, Kingston CA.
2. HIMARS: High Mobility Artillery System, which employs MLRS now and MSTAR in the future. (MLRS Smart Tactical Rocket) is the Division Commander's 'brilliant' munition of choice for targets out to 60 km. It has three sub-munitions per rocket. Issue date not before 2007.
LOSAT: Line of Sight Anti-tank. This is a missile launcher coupled to a 2nd generation forward-looking infra-red TV mounted on an air mobile, high-mobility, multipurpose wheeled vehicle (HMMWV) chassis (eg, Landrover equivalent). It has better range and more lethality than TOW.

3. Air Land Battle was not without its detractors and as General Don Starry noted it was nearly defeated by a lack of consensus from within the Army. Article 'To change an army', *Military Review*, Vol LXVIII No. 3, March 83.
4. Instituted by US Army Chief of Staff General E. Meyer. Article by Zakheim, D. *Defense News* 19 July 99, p. 15.
5. General D. Reimer, Chief of Staff of US Army, 1996-99, 'Strike Force Interview' by Caldwell, Jim, *CASEMATE*, TRADOC News Service, 5 March 99, p. 10.
6. The use of the word *command* is acknowledged as probably inappropriate by TRADOC staff when dealing with non-government organisations and other agencies. However, no other suitable term has yet replaced it in the briefings.
7. Powerpoint slide No. 19 of brief provided to Brigadier M. Swan, DGFLW, 28 June 99.
8. For illustrative purposes only. Some of the suggested components of the start-up force. There has been neither deliberate mention nor explanation of its structure. Organisational solutions are not required yet, only issues for the development of the Strike Force Strategy. The table illustrates the range of capabilities probably needed rather than as an example of the capabilities of the formation. It is not a model but a vehicle for discussion to develop new training methods, leadership and soldier MOS (Australian equivalent is employment category numbers - ECNs).
9. MAGTAF: Marine Air Ground Task Force. It is a sea-based operational manoeuvre element to be employed by a Joint Force Commander (JFC). Size varies but is usually in the order of about 3 000 personnel in a Joint structure. MEF: Marine Expeditionary Force is the principal warfighting organisation. Commanded by a lieutenant general and ranges from less than one division to multiple divisions. Can be a JFC.
10. General D. Reimer, 'Strike Force interview', *Armed Forces Journal International*, McLean VA June 99, p. 17.
11. The 2nd Armoured Cavalry Regiment has been selected to test the high-tech equipment and new battlefield strategies as part of the development of a strike force. In recent years, 2 ACR has been reconfigured from a traditional heavy cavalry regiment to a more deployable and versatile light force. It went from having tanks and Bradley Fighting Vehicles (APC) to Scout HMMWVs and light helicopters, with a focus on reconnaissance and security force capabilities. Members of the unit are upbeat about the next transition, citing the history and capabilities of 2 ACR, which make it an ideal choice to transition into an Army Strike Force. 'The key is [to be] deployable, lethal and versatile', was the comment given by the Executive Officer to 2 ACR.
12. AWE: See article: 'Force XXI and the AWE', *Combat Arms*. Issue 1/98, pp. 1-6.
13. 'Rock drill' is a US term for something between a command post exercise and a walk-through rehearsal of a scheme of manoeuvre.
14. I assume this means an increase in lethal effectiveness regardless of whether in desert, forest, mountain or urban terrain.
15. US equivalent of movement tables are TPFDD: Time Phased Force and Deployment Data.
16. La Franchi, P., 'Australia warned: Absence of simulation policy may undermine Joint Force involvement', *Simulation and Training Technology*, *Defense News*, July 99, p. 18.
17. Krulak, General C.C., *USMC Warfighting Concepts for the 21st Century*, Concepts Division, MCCDC, Quantico, VA, 1997 p.VII-6.

18. Read Macgregor, Colonel. D., *Breaking the Phalanx: a New Design for Land Power in the 21st Century*, Praeger Publishers, Westport, CT, 1997.
19. General D., Reimer, 'Strike Force interview', *Armed Forces Journal International*, June 99, p. 18.

BIOGRAPHY

Lieutenant Colonel Rick Vickers graduated from the Officer Training Unit Scheyville, into the Royal Australian Artillery Corps in 1972. He has served in a variety of postings including the School of Artillery, has been attached to RAGTE in BAOR, and as Project Officer TEAL XXIX. He has served on the Directing Staff at the Royal Australian Navy Staff College at HMAS PENGUIN. In December 1996 he moved to Hampton Virginia, USA to take up his current posting as the Australian Army Liaison Officer and Standardisation Representative, US Army Training and Doctrine Command, Ft Monroe.



BY LIEUTENANT COLONEL O.P. RICHMOND

Australian Army Standardisation Representative
US Army Test and Experimentation Command
(TEXCOM)

The Force XXI process is developing in the direction we want it to go. We will continue to rely on it to take us down the path to the Army's future ... Our objective is to field a digitized division by 2000 and a Corps by 2004.

General Dennis J. Reimer
previous US Army Chief of Staff
January 1998

How do you measure the success of a force modernisation marketing program? It all boils down to money, whether you are funded or not

Colonel Al Turner
Director - Joint Venture Bureau
US Army Training and Doctrine Command 1999

INTRODUCTION

Force modernisation is the challenge facing the defence forces of all developed nations, with demands for more versatile and effective combat forces in times of unrelenting budget cuts and pressure to reduce manpower.

To be able to meet these challenges, defence forces must be able to gain the necessary funding to support experimentation, development and modernisation of all the essential components of capability.¹ Too often modernisation plans consist of a disorganised grab for technology, driven by the 'gee-whiz' salesmanship of defence industries. In most cases, this technology grab is seen for what it is by politicians and bureaucrats, and the result is defeat in detail.

While some may question the directions of US Army modernisation initiatives, there can be no doubt about where they are going or how they intend to get there. Anyone who has had contact with the US Army in the last five years will have been exposed to their plans for force modernisation for the immediate future – *Force XXI*² – and longer term plans to take them on from 2020 – the *Army After Next* (AAN)³.

The 'marketing' of Force XXI and AAN is done well, and is an important contributor to the ongoing modernisation of the US Army. These lessons can be applied to benefit current force modernisation plans in the Australian Army.

AIM

This paper aims to provide a brief outline of marketing mechanisms used by the US Army to promote Force XXI, and draw lessons that have application to the Australian Army. This paper will focus on Force XXI, as the marketing of AAN is following the same principles.

VISION

Joint Vision. Few advances occur without a vision to guide them; and, without the expression of that vision in a simple and lucid manner, there can be no understanding or realisation of the vision. With the legacy of Vietnam clear in their minds, Army leaders like General Gordon Sullivan and General Bill Hartzog have been able to create a vision of where the US Army needs to go. They have seen the need to adapt to meet the changing demands of future combat. They saw the need to introduce information technology to bring combat capabilities into the Information Age. From this vision, the US Department of Defence has produced Joint Vision 2010⁴ – a strategic plan that provides joint focus and operational concepts⁵ for force modernisation.

Army Vision. Consistent with Joint Vision 2010, the Army has produced Army Vision 2010⁶. Army Vision 2010 encapsulates the Army Force XXI vision, and provides a range of Force XXI 'buzz phrases' that couch the key concepts in terms that non-military people can understand⁷.

FORCE XXI

The US Army Force XXI Digitisation Program⁸ is the key component of the US Army's near term modernisation effort. Force XXI is a concept-led program that evaluates 'technology grabs', develops those considered as war-winners and then integrates them into a system of systems. It shifts the focus of modernisation above the equipment-oriented project focus that is endemic in armies worldwide.

IMPLEMENTING FORCE XXI

Force XXI is sponsored by US Army Training and Doctrine Command (TRADOC) with guidance provided by a three and four star Experimental Force (EXFOR) Working Group. Staff direction is provided by a dedicated Joint Venture Bureau (JVB) raised specifically to manage and integrate the progression of the Force XXI vision. The JVB is the sponsor and source of much of the marketing of Force XXI. At Fort Hood, the coal face of the Force XXI digitisation effort, TRADOC has established the Digital Force Coordination Cell (DFCC) to oversee the synchronisation and integration of all components of capability (DTLOMS) required to realise the Force XXI vision.

Detailed guidance is provided from Army HQ through the Army Experimentation Campaign Plan (AECPP), and guidance for Force XXI component programs comes from the Army Digitisation Master Plan (ADMP)⁹.

While there is no formal marketing strategy as may be found in the commercial world, there is a readily discernable focus on the marketing of Force XXI. Armed with the Force XXI 'vision', the Army uses a range of mechanisms to market Force XXI to the general public, the political audience, defence industry and also to the internal Army audience.

MARKETING STRATEGY

Key components of the US Army's marketing strategy are:

- * *Military Champions.* The US Army Chief of Staff uses the TRADOC Commander as the military champion to drive force modernisation from within the Army. Four star leadership has proven to be most effective in focusing Army efforts and resources, and has prevented much of the infighting and disagreement that occurs when the Army moves forward in new directions. Recent TRADOC commanders have actively 'sold' the Force XXI program, arguing the case for digitisation and restructuring with audiences from Congress and foreign heads of state, all the way down to the private soldier. Force XXI has become their prime cause and they have learnt the business, staying around long enough to push it through, with a three year tenure as normal. We should not underestimate the importance of a strong leader and orator with reach to the political level, and dedicated to articulating the vision and gaining support for force modernisation.
- * *Political Lobbying.* Either directly or indirectly, the US Army lobbies key decision makers in Congress and on Defence committees. Defence associations such as the Association of the US Army (AUSA)¹⁰, the Armed Forces Communications Electronics Association (AFCEA)¹¹ and industrial groups such as the National Defence Industrial Association (NDIA)¹² provide support and report on activities that promote force modernisation programs at the political level.
- * *Advanced Warfighting Experiments (AWE) and Advanced Concept Technology Demonstrators (ACTD).* The US Army has used many Force XXI events as marketing opportunities. Events such as the 1997 Task Force XXI AWE¹³ and Division XXI AWE¹⁴ were used as showcase demonstrations of what could be achieved using Information Age technology. In many cases, the demonstrations put before the VIP audience were rehearsed over and over until an almost flawless performance was achieved. The fact that it was a 'sales job' is not significant – what is significant is that the Army was going to great lengths to create the 'vision' in the minds of influential people. They were letting decision makers see what could be achieved, given the direction and resources.
- * *Defence Sponsored Symposium.* The Army uses annual displays and symposiums to market to both the political audience and defence industry. The Army has taken an active role in trade shows that were traditionally dominated by defence industries.¹⁵ TRADOC has produced 'staged experiments' to educate industry and also the wider public audience to the plan for Force XXI. These experiments bring key elements from previous field experiments, are packaged with equipment displays and multimedia technology, and are sold by enthusiastic 'users' from field units. Soldiers are highly effective in selling the product in this forum. Cynical politicians may not believe the General Officer but will nearly always accept the statement from the bright-eyed soldier or junior officer that 'it works, and we need it'. Industry salesman hawking the latest gadget have little comeback to a soldier who announced to the crowd, 'I used it at the National Training Centre and it doesn't work'.

- * *Media.* The media marketing effort uses all the current mediums. Force XXI is splashed across many Army web sites, with a general policy of releasing unclassified 'insights' briefings after each major event. This gives the impression of openness and honesty, even if the insights are heavily sanitised. Full use is made of multimedia, with the giveaway CD-ROM becoming the favoured medium for disseminating Force XXI briefings, reports and video footage.
- * *Bottom Up Marketing – Soldier Involvement.* A key component in the successful marketing of Force XXI is selling it within the Army. TRADOC is still grappling with the issues of educating NCOs and officers Army-wide in the technologies and benefits of Force XXI, but the doctrinal ground work has been laid for some time with the issue of TRADOC Pamphlet FM 525-5 - *Full Dimensional (Force XXI) Operations* in 1994.¹⁶ At the lower levels, the Army has had great success in selling Force XXI to soldiers. The key mechanism used here is involvement. The implementation of Force XXI digitisation has been centred at Fort Hood, home to 42 000 regular Army soldiers. Many of these soldiers have been integrated into the development process using what is now referred to as 'spiral development'.¹⁷ Those soldiers rapidly develop ownership of the process as they see their input being valued and acknowledged. Soldiers in the test bed Force XXI unit – 4th Infantry Division – are often heard to say that they will willingly 'take their systems to war.'

Success or Failure? In the longer term, the fielding of capable Information Age units is perhaps the only true measure of success. In the shorter term, the success of the marketing effort is best measured using the 'Turner Criteria'.¹⁸ On this basis, the US Army is doing reasonably well. Not only are the US Congress and Defence bureaucracy convinced of the necessity for Force XXI, but they also have been persuaded to allocate reasonably substantial funding towards the program. Many component programs have not been funded; but, overall, the future of Force XXI remains healthy.

AUSTRALIAN EXPERIENCE

In Australia, the intellectual effort behind the Army 21 Study and the Restructuring the Army (RTA) initiatives have provided a similar 'vision' and conceptual guidance towards the achievement of the Enhanced Combat Force (ECF). This has resulted in some good experimental work, but there appears to have been an absence of sustained marketing and clear articulation of that vision.

The DC-A is now tasked with the progression of RTA, and he draws guidance from the RTA Steering Group. Staff responsibility for RTA has been delegated to the Directorate of Concept and Capability Development (DCCD-A)¹⁹ within the Directorate of Future Land Warfare (DFLW-A). Implementation of trial activities has now been passed from 1st Brigade to the Combined Arms Training and Development Centre (CATDC) at Puckapunyal.

The outcomes of the first RTA trial have been passed to the Defence Science and Technology Organisation for analysis, but we have yet to see the recommendations reviewed by the Chief of Army Staff Advisory Group (CASAG) or any public announcement of key insights or outcomes. The *Army Newspaper* covered the RTA Trial activities but outside media coverage has been minimal. During the RTA Trial, several displays were conducted and an open day was held in Darwin for key politicians.


Lessons for Marketing Australian Army Modernisation. While an Australian audience may recoil at the glitz and hype of American marketing methods, we should perhaps sit back and consider the Australian Army's performance in marketing RTA and the development of the ECF:

- * *Champion.* Who is our high ranking military champion dedicated to driving the progression of Army force modernisation? Can DC-A carry this task amid the clamor of current contingencies? With the formation of the CATDC, could we see the Commander Training Command – Army take on responsibility for implementing force modernisation plans produced by DC-A and DGFLW-A?
- * *Political Lobbying and Articulating the Vision.* How has the RTA / ECF vision been passed on to politicians and Defence bureaucrats? Will the one-off demonstrations conducted during the RTA trial be adequate, or should we perhaps be looking for annual events to showcase progress made and display the target 'vision'? Do we need to package some vignettes from RTA activities and transport them to Canberra for the ongoing education of politician and Defence decision-makers? Can we better utilise Australian Defence and industry associations to assist in promoting force modernisation?
- * *Passing the Vision to the Troops.* How many soldiers will be involved with RTA at Puckapunyal, and if we ask an Australian Army soldier (outside 1st Brigade) what RTA is all about and where it is going to take the Army in the next 10 years what will the answer be? Do we need to have the RTA process publicised more widely within the Army, and could we consider how to get greater ongoing soldier involvement in RTA?
- * *Success or Failure.* How many dollars (outside the Army base budget) has Defence allocated for future RTA / ECF initiatives? The answer is – precious little. RTA has now drawn a small amount of ongoing funding from within the Army program but has still to draw any Defence funding outside the stove-pipe project system²⁰ we now 'enjoy'. Should the Army be actively lobbying for Defence to recognise land force modernisation as a vital long-term investment and to fund it accordingly?

CONCLUSIONS

Under the Clinton administration, the US Army has had a difficult time funding force modernisation programs. The Army has lost many battles but they are winning the campaign. They have a clearly explained and documented vision and have allocated staff and resources at all levels to see that the vision is realised. The marketing activities that promote this vision are a vital part of Force XXI – and the US Army does it well. Most importantly, the US Army has not allowed the 'urgent' demands of current contingencies to derail the 'important' issues of force modernisation.

RTA has provided the initial impetus for a dynamic force modernisation effort; however, we may be missing the opportunity to realise the potential of RTA by not fully developing an RTA campaign plan or selling it effectively at all levels.

Perhaps it is not too late to reconsider the marketing issue, or in ten years time we may find that we still have an Industrial Age Army, ever prepared for short-term contingencies. 

ENDNOTES

1. Capability is defined in US Army terms as the sum of Doctrine, Training, Leadership, Organisation, Materiel and Soldiers (DTLOMS).
2. The key component of Force XXI is the digitisation of the C3I networks. Detailed information relating to the US Army Force XXI process can be found at <http://www.ado.army.mil> and current events are at the Force XXI web site at <http://www.dfcc.army.mil/>.
3. See <http://www-tradoc.army.mil/dcsdoc/aan.htm>.
4. JV2010 can be downloaded from http://www.army.mil/ahp/mission_vision.htm.
5. Dominant manoeuvre, precision engagement, full dimensional protection, focused logistics, information superiority.
6. Army Vision 2010 can be downloaded from http://www.army.mil/ahp/mission_vision.htm.
7. Integrate the force, dominate information, shape the battlespace, sustain the force, project the force, conduct decisive operations, protect the force.
8. Digitisation is defined as the application of modern information technology to the military environment with the intent of producing an integrated high-speed C2 structure reaching from the National Command Authority to the individual soldier on the battlefield.
9. Available at <http://www.ado.army.mil>.
10. Further information can be found at <http://www.ausa.org>.
11. Further information can be found at <http://www.afcea.org>.
12. Further information can be found at <http://www.ndia.org>.
13. The aim of the TF XXI AWE was to test the impact of information age technologies on lethality, survivability and tempo, using a digitised EXFOR Brigade TF in an instrumented free-play rotation at the National Training Centre (NTC), Fort Irwin CA in March 97. The AWE also became a battlelab / test bed for introducing and evaluating a huge range of prototype technologies and new organisational structures.
14. Division XXI was a simulation exercise designed to extend digitisation up to division and corps level. Division XXI was conducted by III Corps and 4th Infantry Division at Fort Hood in November 97. An overview briefing is available at <http://www.ado.army.mil/Br&doc/brdocset.htm>.
15. The annual AUSA Annual (October) Meeting in Washington, DC is one of the largest and best attended defence expositions in the world.
16. FM 525-5 provides the doctrinal guidance for the development of Force XXI and is available on CD in the Australian Army Doctrine Electronic Library (ADEL), or on the web at <http://www.monroe.army.mil>.
17. Spiral development is a technique focused at accelerating system development and integration to support rapid fielding of C3I technologies. It involves bringing together disparate systems and a wide range of development capabilities under a focused project management leader, and centred on the most important asset – the user. A briefing is available at <http://www.ado.army.mil/Br&doc/brdocset.htm>.
18. The Turner Criteria is detailed in the second quote at the start of the paper – success is measured by funding.
19. An amalgam of DRTA and DLW-A.
20. Funding is being allocated only against specified deliverable hardware such as rifles, machine guns or fighting mobility systems, with significant Defence opposition to funding for development of

integrated combat systems for the land environment. For example, WUNDURRA (a system of systems), a developmental project that has adopted a holistic approach to optimising the capabilities of the combat soldier project is not understood as it does not readily provide a commercial-off-the-shelf solution and to date has been buried in a mire of studies and bureaucratic procrastination.

BIOGRAPHY

Lieutenant Colonel Richmond graduated to RAINF from RMC in 1981. He has served in regimental appointments in 1RAR, as Adjutant of 2/17 RNSWR, and in a number of appointments within SASR. Lieutenant Colonel Richmond also has served as a staff officer in Headquarters ADF. He is currently serving as the Australian Army Standardisation Representative at the US Army Test and Experimentation Command. Lieutenant Colonel Richmond holds a Diploma of Personnel and Resource Management and a Bachelor of Arts majoring in Military Studies. He is a graduate of the Royal Military College of Science, Shrivenham, UK and the Command and Staff College. In January 2000 he takes up the appointment of Commandant, Special Forces Training Centre.

AUSTRALIAN EXPERIENCE - AN UPDATE

On 19 October 1999 visitors including representatives from industry, foreign armies and Australian military members attended 'Headline Experiment' at the Combined Arms Training and Development Centre (CATDC).

The COMD CATDC representing COMD TC-A and the Army as a whole, championed the work being done under the auspices of Restructuring the Army (RTA).

The visitors day was part of marketing evolution towards a future force.



L-R Colonel Sealock, Major Haynes and Colonel Hutchinson

Photo Courtesy of Sapper Matt Leehane



L-R Dr. David Glennie (DSTO EWD/ITD) and Dr. Jeremy Manton

Photo Courtesy of Sapper Matt Leehane

MILITARY SCIENCE IN AN AGE OF PEACE

A View from Century's End

BY DOCTOR R. SPILLER

US Army Command and General Staff College¹

In 1973, Michael Howard won the Royal United Services Institution Chesney Gold Medal Prize. He was obliged to deliver an acceptance speech, which later was published in the *RUSI Journal* under the title, 'Military Science in an Age of Peace'.

I'm afraid I don't know how this essay was received in Britain, but I can tell you that in the United States it has proved to be very durable. Beginning in the late 1970s, and ever since then, students at the US Army's Command and General Staff College have been made to read it. Those staff college students who go on to compete for places at the School of Advanced Military Studies are required to compose an essay based upon Howard's argument. There can be few officers in the US Army at the rank of major and above who have not encountered it.

I think it does Howard no injustice at all to say that his argument turned on a uniquely British case, drawn from the army's experience between the two world wars. But for the better part of a generation, Howard's essay has enjoyed a status in the US Army that no other essay can claim. Why? Two reasons offer themselves.

First: although Howard is pre-eminently a military historian, his carefully drawn generalisations from the interwar period looked mostly toward the future. For any kind of historian, doing something like this entails no small professional risk. As a class, historians are very coy about discussing the future. They generally don't do it, and they disapprove of those few among them who do. But Howard clearly believes that historians, if they will overcome their prejudices, are as well equipped to deal with the future as anyone; and, because of their particular set of skills, probably could be better at it than most. If one were to examine the whole of Howard's writings, one would see straightaway that a considerable part draws upon historical knowledge to address contemporary questions in international relations, grand strategy and its subordinate elements. When one reads Howard, however, one does not see anything like the literal translation of historical experience to future considerations; instead, Howard deploys his considerable skills—skills acquired during a lifetime of professional thought and practice—to assist him in understanding modern problems in their contemporary context. In short, we see not the application of history so much as the application of the historian himself. The result is that Howard's writings speak to modern problems in a modern way. He does not wag a schoolmaster's finger at his readers. This accounts, at least in part, for the way in which Americans have received his work over the years.

Second: Howard's RUSI essay came out at a time in the Cold War when defence policies everywhere were in a state of flux, and that description certainly fits that of the United States. We had found ourselves, he said, in an 'Age of Peace', which he thought was not a peaceful age, but only one in which 'most people do not seriously think there will ever be a great war again'. In such a time, armies got little rest. Indeed, armed forces may be so preoccupied by a world beset by 'violence, disruption and revolt',

they may feel they have no time left over preparing for a major war, which is their paramount business.

So, the fundamental question for Howard was how modern armies can avoid falling short when the real war shows its face again, as inevitably it will. Well, he thought the odds were against the armed forces being close to ready for such a national emergency. In point of fact, when armed forces attempt to prepare for the future they will almost inevitably get it wrong. Nevertheless, they are obliged to try.

The burden of preparing for the future, Howard thought, fell upon what he called 'military science', which he defined simply as disciplined thinking about military affairs. But even assuming armies could find a place for people who are skilled at such thinking, their chances of success were slim. Institutional inertia and indifference – if not outright hostility – to intellectual work constituted the most important immediate barriers, but then there was also the irreducible fact that no matter how skilful the military scientist, the exact shape of the future would elude him. For Howard, the only answer was to remain flexible in the face of uncertainty, to understand that when the real war appeared, the side that was most amenable to change would enjoy an advantage. So, Howard's lesson, put more briefly, was 'he who thinks best, fastest, wins'.

Given all that has been written about the subject of the military future of late, it is tempting to regard Howard's address as a period piece – good for its time perhaps, but long since rendered obsolete by the redefinition of the world since 1989. To my mind, however, his leading observations stand intact. In fact, his definition of an Age of Peace may be even more to the point today than when he defined it. Even though the Cold War is well over, armies everywhere have seen their operational tempos and frequency of deployment rise constantly. Even though armies everywhere are experimenting with new doctrines, new formations, and new equipment, as institutions they seem no more capable of encouraging progressive change than they ever were. The odds of 'getting ahead of change', a phrase one often hears in the 'States these days, are still against us.

Getting ahead of change is problematic, notwithstanding the enormous amount of intellectual and financial investment being made to anticipate the future. Because we make these investments, we seem to expect that we will naturally enjoy a return on them, but it seems that the gap between success expected and success enjoyed is growing wider. When that happens, national and institutional anxieties intensify, and in our frustration we are prone to deceive ourselves that we are 'getting it about right', to use Howard's phrase.

The future is such big business these days, it is difficult to recall a time when the future was a new business. A little more than a hundred years before Howard received his Chesney Gold Medal, the man who first sponsored the prize for RUSI, George Tomkyns Chesney, wrote a little story for *Blackwood's* magazine, entitled: 'The Battle of Dorking'. Chesney (a lieutenant colonel of engineers on half-pay, turned writer) visualised war in the future, in which a marauding German army invaded England and in the process laid waste to all the dearly held verities of British defence policy. Happily for Chesney's readers, the Germans reached their 'culminating point' in a London suburb, and England escaped destruction by a whisker.

Great literature it was not. But Chesney's little story had the genius of timing, for it touched an anxious nerve in a public existing in a new age of anxiety that was just about to stretch all the way around the world: a new age of unprecedented scientific and technical advances, all moving so fast that no one could make sense of the whole. With industrialisation and urbanisation and the attendant cultural and social upheavals, everyone was trying to see a way through the confusion to the clear air on the other side. The underlying question was: 'If the present is so confusing, how can we prepare ourselves for what will happen next?' I think this must have been the time when we see

the birth of our obsession with the future in all its modern dress. And, those who were dressed in uniform were not immune.

The finest military minds of the age occupied themselves with the shape of the future too. That these fine, energetic minds failed to see the looming disasters of the Great War should fill us all with the deepest, most abject humility – certainly not with optimism.

Last November during a war at the Army War College, I found myself thinking about George Chesney and Michael Howard. The game was part of a series sponsored by the so-called 'ARMY AFTER NEXT' (AAN) Project. The scenario was predictably set in the Persian Gulf, but in the year 2025. The principal US Army formation involved was the newly-conceived Strike Force. As the briefers laid down the terms of reference for the game, it occurred to me that what the 100 or so participants were attempting to do was roughly the equivalent of sitting at the Versailles Conference, predicting Hiroshima.

I don't mean to imply that exercises of this kind are not worth doing; in fact, we learned a good deal, but most of it indicated that we should be very cautious about making bold prognostications. That would seem to be a contradiction of what I've already said, but it isn't. One of the reasons the war game struck me as misconceived was that we were trying to be altogether too precise about the future. Implicitly, we were attempting to predict the future, not to forecast it. That is a very important, I would say critical, distinction.

The difference lies in the goal of each activity. In the business of prediction, precision is the objective. The closer one's call, and the finer the level of detail, the better. Forecasting, on the other hand, is aimed toward educated generalities, the purpose of which is to avoid committing oneself to an irrevocable course of action. In forecasting, flexibility is the prime value. Ideally then, prediction should be a subset, a derivative, of forecasting.

I was at this war game because I had earlier been a member of the original Steering Committee for the AAN Project. The project was established by direction of the Chief of Staff of the Army and located at Training and Doctrine Command, whose Future Battle Directorate would exercise oversight. TRADOC'S Deputy Chief of Staff for doctrine held the chair. Our mission was originally intended as an unconstrained, broad forecast of the military future reaching out to the year 2040. The terms required us to report to the Chief of Staff on what we thought were the most likely scenarios for this period on four separate areas: the state of geostrategic affairs, the state of military technology, the state of the art of war, and the state of human and behavioural organisation.

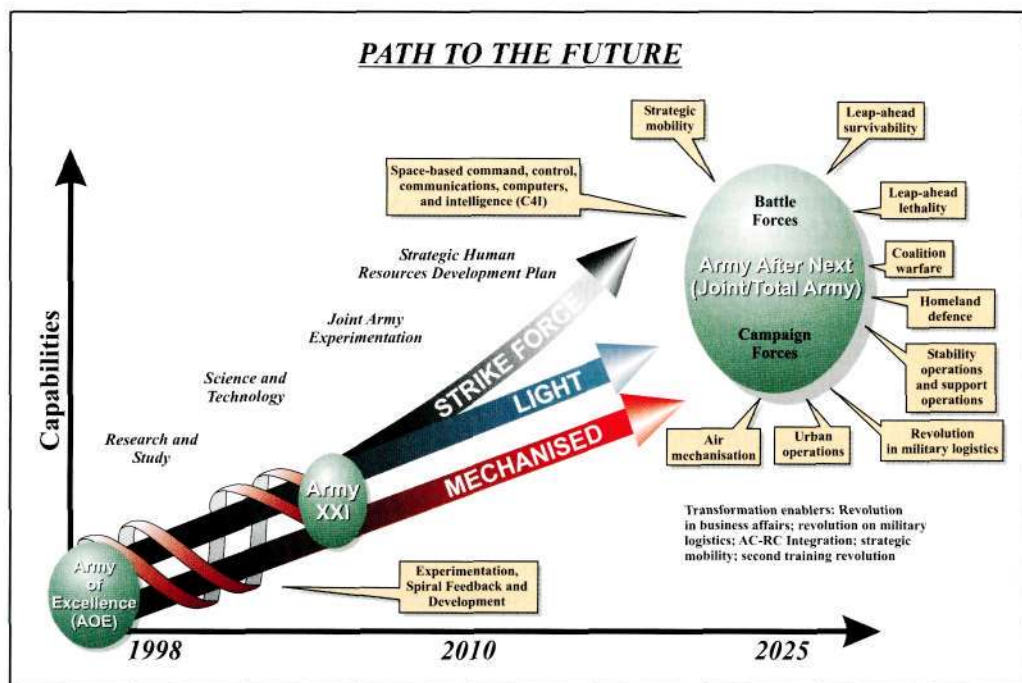
The Steering Committee was surprised in its accord on any number of issues. After taking a round of briefings on the four study areas, we had substantive disagreement only on one of them – the expected state of human and organisational behaviour.

Unfortunately, to my mind, the original terms of reference for the project evolved away from forecasting toward prediction. I think it was the wrong move to make, but I also think that the reasons the Army moved in that direction were explicable. There were and are good and sufficient reasons for it. But the requirement for forecasting, though abandoned for the moment, still stands.

Since my original involvement with this project, some two or three years ago, the US Army has announced that soon after the turn of the century it will field a new formation called the 'Strike Force'.

This force will be strategically deployable and small but very powerful, capitalising upon speed and technological superiority. Its soldiers will be intelligent, expert, and physically fit – capable of withstanding the stresses of intense, near-continuous operations. Think of it as kind of an airmobile brigade on steroids. The normal objective of this force will be to so disarrange the enemy that few casualties will be sustained on any

side. Now, I ask you, who wouldn't want an army like this, a real Ferrari Force? And who wouldn't want such a war, assuming one that has to be fought?



From: US Army Maneuver Support Centre and Fort Leonard Wood,
 Engineer – *The Professional Bulletin for Army Engineers*, August 1999, PB 5-99-3,
http://www.wood.army.mil/ENGRMAG/emag_hp.htr.

The author, Mr Lowrey, is the Technical Director of the
 Maneuver Support Battlelab at Fort Leonard Wood.

The vision is very appealing, and there is every prospect that at the appointed time the US Army will have such a formation. And, of course, it is hoped that if we have to fight, we will have a fight like the one imagined.

So what is wrong with this picture? Nothing at all, as far as it goes:

- * It assumes that war in the future will be pretty much like war in the present.
- * It assumes that conflict will be contained to its original site.
- * It assumes that our enemies will be pretty much then like they are now.
- * It assumes that the army of the future will be pretty much like the army of the present, but with a few technical additives.
- * It assumes that all our military problems will be technical and therefore susceptible to technical solution.
- * It draws a straight line of extrapolation from the present to the near future.
- * It assumes that, while we might be surprised, we'll be able to handle it.

- ✧ It assumes that the social fabric of the army will be pretty much like the present.

If you examine each one of these assumptions, however, you will find they are very like the assumptions made by each of the leading armies between the two world wars. One only needs to calculate how vastly different the Second World War was when it ended than when it began, and one begins to get an idea of how far off predicting a military future can be.

Now, armies are inherently conservative, hierarchical institutions and as such are not well disposed toward progressive change. They can change, and have changed, but they don't like to do it. And, I do not think that any responsible person would argue an army should go about changing, willy nilly, just for the hell of it. So, how do we guide our way between our responsibilities to the present, and our responsibilities to the future?

I hope that I am not merely succumbing to my professional prejudices when I argue that the way lies through an army's system of higher military education. This was the one avenue of progressive military change that Michael Howard did not address in his essay. Perhaps that was because higher military education did not play an important role in his army during the interwar period: the reforming impulse, such as it was, played out in other quarters. In the American Army, however, significant progress in military thought was made in the higher professional schools. Political, economic and social strictness imposed on the American armed forces generally during the interwar period allowed for no other venue of reform until the dangers of the coming war were plain for all to see. The higher military schools became the arena of progressive military reform; they were the one place professional officers were allowed to experiment.

Of all the avenues for change that an army seeking to capitalise upon an 'Age of Peace', what are the advantages of doing it the higher military way? Why not simply depend upon the scientific laboratory or the training grounds to show the way ahead. Four advantages come specifically to mind.

The first has to do with the scope of change. No other mode of reform – doctrine, tactics, modernisation, institutional reorganisation – has the capacity to reach the professional corps of soldiers so broadly, comprehensively, and with the requisite amount of discipline as are reforms conducted through the medium of higher military education.

The second advantage has to do with the depth of change. Higher military education, properly conducted, can inculcate a deep change in the human, intellectual, professional and technical fabric of its army. What kind of change, and the depth to which it should be aimed, are questions best determined by the army itself; but, by using this instrument, an army can inculcate the most profound alterations in its conception and conduct of war. Howard and others have hinted that armies only change when that change comes from outside its ranks. And while I think armies may well be made to change – for better as well as worse – by external influence, I do not regard this rule as ironclad. Armies can change themselves, and have.

The third advantage of higher military education is generational change. This is the only genuine variety of change, in my view. Most armies are familiar with bureaucratic change and are quite sceptical about it. Generational change, unlike bureaucratic change, is not driven by events or temporary enthusiasms. Once generational change is consummated, the shelf life of such change is several orders of magnitude longer lasting than bureaucratic change. Generational change, moreover, creates its own broad consensus over time, while bureaucratic change pits constituencies against one another to the detriment of the institution as a whole and its readiness.

Finally, the fourth advantage is economy. No other form of investment returns such high premiums over the long term. No other form of investment, paradoxically, is so often stigmatised by the establishment as 'expensive' or a 'luxury'.

Why do I think I am fooling myself? For the simple reason that in several specific cases, armies have willingly and deliberately done exactly what I have described. I can name four of them: the Prussian Army after Jena-Auerstadt; the Imperial Japanese Army after the Meiji Restoration; the Chinese Communist Army during the '30s; and the US Army, which has done it twice—first at the turn of the century, and then after 1976.

Aside from their common objective, did these armies reveal any other similarities, despite distances in time and culture? The answer is 'yes'. Their institutions of higher military education were highly receptive to experimentation—the very best kind of experimentation for any army, that is, the kind that carries no penalty for failure. Their schools became their laboratories of future war. They became the centrepieces of intellectual mobilisation during their 'ages of peace'.

You will have noticed that I have proposed no specific outcome. I am most interested in the process of what we do; and, I am confident that if we get around to doing it, we will be coming as close to anticipating the future as we are ever likely to get.

In my army today, there is no lack of activity directed in some vague way toward the future. What that activity lacks is the discipline to make sense of what there is to make sense of, but most of all it lacks the discipline to ask the vital questions in a productive atmosphere. Intellectual mobilisation does not require a blitzkrieg into Poland or a Pearl Harbor to bring it to life. In an Age of Peace, intellectual mobilisation is or should be the first interest of any modern armed force. To my mind, that is the next great and pressing requirement for my army, and indeed for all modern armies. ✕

ENDNOTE

1. The views expressed in this essay are those of the author only and are not to be construed as official representations of the US Government.

BIOGRAPHY

Roger J. Spiller served in the US Air Force 1962-65 as an air rescue medic. In 1969 he graduated from South West Texas State University and he gained his Ph.D. in US military history from Louisiana State University in 1977. In 1979 he was a founding member of the United States Army's Combat Studies Institute (CSI) and also served as Director CSI in 1990-91 and 1993-94. He is currently George C. Marshall Professor of Military History at the US Army Command and General Staff College, Fort Leavenworth, including teaching in the School of Advanced Military Studies. From 1982-85 he was Special Assistant to the Commander in Chief of US Readiness Command in Tampa Florida, and from 1991-95 he was Special Assistant to the US Army Chief of Staff. He is the general editor of the three-volume *Dictionary of American Military Biography* and a consultant editor for *American Heritage Magazine*. His recent articles include *In the Shadow of the Dragon: Doctrine in the US Army After Vietnam*, in the *RUSI Journal*, January-February 1998. He is also currently writing a book on the individual experience of battle, entitled *In Wartime*, for Random House.



BY MAJOR M. EGGLE

Military might until not long ago was basically an extension of the mindless fist. Today it relies almost totally on 'congealed mind'—knowledge embedded in weapons and surveillance technology.

Alvin Tofler, *Power Shift*

INTRODUCTION

There can be little dispute that the invention of the computer and electronic microchips has had a fundamental effect on both civilian and military technologies since the 1960s. Today's military weapon systems and the infrastructure of war are almost totally dependent on the information-based technologies of computers, software and the microchip. The rapid emergence of technologies such as satellite communications, precision weapons, image intensifiers, thermal imagers, tank fire control systems, frequency hopping combat radios, and command and control systems are testimony to the importance of the computer in today's battlespace. One only needs to reflect on the recent experience of the 1991 Gulf War to see that a revolution is underway in the conduct of future military operations. Much has been written about the impact of Information Age technology under the banner of 'Revolution in Military Affairs'. Whether you believe that military forces are in the midst of a revolution or that we are simply witnessing an extension of the Industrial Revolution which started some 200 years ago, there can be no doubt that the current pace of change is unprecedented and showing no signs of relenting.

For military staff and planners operating in this swirling sea of change, it is difficult to predict precisely the influence of technology on future operations. However, it is possible to identify trends and make some considered judgments on what the future might hold. This paper, therefore, will consider some possible influences of information-based technologies on future operations. As a way of setting the scene, the paper opens by considering a number of key information-based technologies influencing military thinking before drawing some deductions on possible future outcomes.

KEY TECHNOLOGIES

Probably one of the most impressive applications of information-based technologies has been in the area of space-based communication systems. The Gulf War was the first instance in history where combat forces largely were deployed, sustained, commanded, and controlled through satellite communications.¹ Satellites played a key role in surveillance, gathering electronic intelligence and forming a crucial link in the overall command and control system of the US-lead coalition. Indeed, satellite communications provided the essential connectivity into the Gulf theatre and helped to overcome problems associated with the absence of US, or allied command and control infrastructure in the region.



Ground-based Satellite Communications

However, the reliance upon satellites created a dependence on critical—often overloaded—satellite down-link nodes which, fortunately for the allies, Iraq neither jammed nor destroyed.² Given the strategic importance of satellite communications, it is likely that both space-based satellites and ground stations will become key enemy targets in future conflicts. Ground stations would be particularly vulnerable to special forces operations, and this would suggest that system redundancy will become a key characteristic of strategically important elements of satellite-based communications. Without adequate redundancy, the strategic and operation level leverage conferred by this capability could be lost in a single stroke, effectively crippling the nervous system controlling deployed forces.

Another information-based technology leveraging off satellites is the navigation system known as the NAVSTAR Global Positioning System (GPS). In the Gulf War, GPS was used extensively to support tactical navigation both on land and in the air. The location and navigation precision permitted by the GPS greatly enhanced the ability of virtually every element of the allied armed forces.³ However, the impact and importance of the GPS system has been more far reaching. GPS is now a key component in precision strike weapons such as the 'Tomahawk' cruise missile, remotely piloted vehicles, parachute delivery systems and cargo tracking. In the near future, GPS is likely to be fully integrated into reconnaissance and surveillance systems that will enable ground forces to rapidly determine and report positional information. This information when integrated with command, control and intelligence systems will greatly enhance commanders' bat-

blespace awareness and reduce the time taken to report positional information for targeting purposes. For instance, an integrated LASER range finder and GPS connected to a forward observer's fire mission request/VHF radio system would reduce errors and the time taken to deliver the first round on target.



LASER Range Finder

Photo Courtesy of the Army Magazine

Robotic weapon systems⁴ are another important application of information technology that will influence the conduct of future operations. The use of robots commenced in World War I when miniature airplanes were packed with explosives and hurled at targets.⁵ Since these basic beginnings, robot design has steadily advanced in both the commercial and military fields. In particular, the influence of robots in today's society is most visible in the automation of assembly line manufacturing.

In the military sphere, a great deal of research is being done in America and Europe into artificial intelligence and parallel processing which are the fundamental technologies underpinning future developments in military robotics. The reason military forces around the world are interested in robots is twofold. Firstly, robots can undertake a range of missions (such as minefield clearance or aerial reconnaissance) that are considered too hazardous to be undertaken by people. Secondly, robots offer the potential for significant cost savings in manpower. Currently, the US Army Infantry School and the Missile Command are developing a robotic anti-armour system (RAS) that has a remote missile system mounted onto a mobile chassis.⁶ The advantages of the RAS are that it enables the robot to occupy tactically advantageous areas without clear avenues of retreat and at the same time keep the operator safe in some other location. Suicide missions, therefore, could be acceptable for disposable robotic systems; that could act as a significant force multiplier.

The current debate surrounding the use of robots on the battlefield is focused on the question of what extent men should be 'in the loop' concerning their command and control.⁷ Given that we are in the early stages of the Age of Automation, it is not surprising that resistance exists to the concept of fully autonomous robots operating in the future battlespace. Many of today's senior military officers with their skills and experience firmly rooted in personnel intensive armies are fearful that autonomous robots could run amok. Nevertheless, the trends are clear. In the next 10-20 years, robots using teleoperators will emerge first on the battlefield because their technologies are less complex and the military bureaucracies will be more comfortable with their existence.⁸ In the longer term, it is likely that fully autonomous robots will gradually appear in great num-

bers to undertake those missions considered too dangerous for humans. Another factor supporting the continued growth in robotic weapon systems such as cruise missiles, remotely piloted vehicles, mine clearance devices, etc is robotic technologies are one of the few remaining options available to military forces to offset the effects of reducing budgets and personnel numbers.

Another area worthy of consideration relates to impact of information technologies on the infantry soldier. Today, there are a number of nations undertaking projects to directly enhance the survivability and lethality of the modern infantry soldier.

The US Army has initiated the American 21st Century Land Warrior Program and Australia has Project WUNDURRA. The US program is part of the broader Army initiative, Force XXI, and is based on the belief that the soldier must be integrated into the digital battlespace if Force XXI is to be successful.⁹ The Australian infantry soldier 'fighting system' aims to integrate the following components: a hand-held data terminal, including GPS and digital maps; a video transfer unit; helmet mounted video; an uncooled thermal image weapon sight; personal communicators; and a head-up display. At the heart of all this integrated technology will be the soldier's tactical computer.



Sniper Rifle

Photo Courtesy of Bill Cunneen

The concept of integrating all this technology is to connect the battlespace by a network of digital communications between the soldier on the ground to platforms such as helicopters, tanks, armoured personnel carriers and other air, sea and space assets. While the aim of all this technology is to increase the survivability and lethality of the soldier, armies that can afford this technology will need to ensure that essence of basic soldiering – initiative, flexibility, boldness – are not lost or diminished. Additionally, soldiers required to fight and survive in this digital environment may need a higher mental capability – they can be readily recruited from society. Such factors indicate that the pursuit of technology for technology's sake is fraught with dangers. Crevelld sums up these concerns when he indicates that the side whose dependence on sophisticated technology is the greatest may fall victim to older, simpler, ballistic weapons operating below the sophistication threshold.¹⁰

IMPLICATIONS

So what are likely to be the major effects on the operational environment arising from the influence of information technologies. Firstly, it is clear for middle-sized powers, such as Australia and the ASEAN states, that the cost and complexity of new weapons systems will force further reductions in the size of armed forces. Armies in the near future will not be able to afford the full range of military capabilities they now possess, forcing the retirement of some weapons considered important to maintaining a balanced military capability. The loss of these capabilities are likely to be offset by increasing bilateral and regional defence arrangements, and the use of coalition based forces. For such arrangements to be effective, much more emphasis will need to be placed on interoperability issues, particularly in the areas of command, control and communications. Australia has recently declared that a high priority will be given to investments to develop interoperability with ASEAN nations.¹¹ However, one must seriously question the degree of interoperability achievable in reality, given the high cost of command, control and communications technology, the regional cultural differences, and the economic difficulties likely to be facing ASEAN states in the short-to-medium term.

The second major effect of information technologies will be on speed and tempo of future operations. Commanders in the near future will have unprecedented levels of connectivity with all levels of command via hand-held communications terminals. The capability for instantaneous transmission of orders and other tactical information via satellite communication systems will reduce battle procedure time and speed up the critical decision-making cycle. In the Gulf War, no one expected the allied ground troops could advance at such historically high speeds. This increase in velocity was spurred by computers, telecommunications, and — significantly — satellites.¹² However, care must be taken when interpreting the role of technology in the stunning victory of the coalition forces in the Gulf War. As Crevelled notes, the more complex an operating environment the less benefits technological superiority can confer. US experiences in Vietnam and Somalia are good examples of the diminishing returns of high technology when ground forces are operating in a complex environment.

Combat service support functions will also benefit in many ways from the use of new information technologies. The ability of deployed logistics staff to communicate instantaneously with the support area will reduce deployed inventory holdings, saving money and manpower. New cargo tracking systems using GPS and barcode technologies will reduce transport times and accounting effort in the movement of supplies and materiel. Maintenance personnel will be assisted in their repair task through the greater use of information-based fault diagnosis and automatic test equipment technologies. In the future, the clever application of information-based technologies will enable combat service support capabilities to provide better, more efficient services with a reduced requirement for transport and supply personnel. However, the increasing complexity of new weapon systems is likely to give rise to the requirement for additional maintenance personnel who will need higher levels of investment in their education and training. This would appear to be one of the paradoxes for armies who seek to use technology as a force multiplier.

With the collapse of the Berlin Wall and subsequent reduction in tension between the world's superpowers, the thrust of change is toward strengthening low-intensity combat capabilities with new improved technologies — sensors, space-based communication, non-lethal and robotic weapons.¹³ Also, major modern weapon systems are, for the most part, designed to fight machines rather than men. This, as well as their very power, range and speed, makes them dependent on technological (electronic) means for surveillance, reconnaissance, target acquisition, range finding, gun laying, damage assessment, and so on.¹⁴

CONCLUSION

Information based technologies such as the satellites, surveillance sensors, GPS NAVSTAR, thermal imagers and computers are revolutionising the way Armies will conduct future operations. The benefits of this new information technology will not be confined solely to combined arms operations but also will cover the gamut of combat service support operations. However, the benefits of increased targeting precision, situational awareness and instantaneous communications are likely to favour less complex operational environments such as that which existed in the Gulf War. Leading edge technology is likely to be less effective in complex environments such as those found during the Vietnam War or recent operations in Somalia. Ultimately, the greatest victories that have been won did not depend on a simple superiority of technology, but rather on a careful meshing of one sides advantages with the other's weaknesses so as to produce the greatest possible gap.¹⁵ It is clear that the influence of information technologies on future operations will be as profound as were the changes to warfare with the invention of the cross-bow, gunpowder and the tank. ✕

ENDNOTES

1. Tofler, A. & H., *War and Anti-war*, p. 98.
2. Strategic and Defence Studies Centre, 'Command, control, communications and intelligence in the Gulf War - Working Paper No. 262', ANU, 1991, p. 4.
3. Miller Barry, 'GPS proves its worth in Operation DESERT STORM', *Armed Forces International Journal*, April 1991, pp. 16-17.
4. Robotic weapon systems can best be defined as autonomous, semi-autonomous and tele-operated artificial systems that perform military missions thought to be appropriate for human beings.
5. Shaker, S. and Wise, A., *War Without Men: Robots of the Future Battlefield*, Pergamon-Brassey's International Defence Publishers, 1988, p. 5.
6. Ibid, p. 49.
7. Ibid, p. 48.
8. Ibid, p. 164.
9. Hole, R., 'Emerging technology for Army in 2015', *DARA Newsletter 8/96*, Australian Army, p. 5.
10. Creveld, M., *Technology and War*, The Free Press, 1991, p. 282.
11. *Australia's Strategic Defence Policy, White Paper, 1997*, p. 48.
12. Tofler, A. & H., *War and Anti-war*, p. 79.
13. Ibid., p. 181.
14. Creveld, M., *Technology and War*, The Free Press, 1991, p. 303.
15. Ibid., p. 90.

BIBLIOGRAPHY

- Ball, D., 'Working Paper No. 273 – Trends in military acquisition in the Asia-Pacific region: Implication for the security and prospects for constraints and controls', Strategic and Defence Studies Centre, Canberra, July 1993.
- Betts, Richard, K., *Military Readiness: Concepts, Choices, Consequences*, The Brookings Institution, 1995.
- Buzan, B., *Strategic Studies—Military Technology and International Relations*, Macmillan, London, 1987.
- Creveld, M., *Technology and War*, The Free Press, New York, 1991.
- McNarn, M., *Conventional Arms Procurement in ASEAN – A Defence Export Role for Australia*, Australian Defence Studies Centre, Canberra, 1995.
- Rice, M.A. and Sammes, A.J., *Command and Control: Support Systems in the Gulf War*, Brassey's (UK), 1994, Vol 12.
- Shaker, S. & Wise, A., *War Without Men: Robots on the Future Battlefield*, Pergamons-Brassey International Defence Publishers, 1988.
- Toffler, A., *Power Shift*, Bantam Books, 1990.
- Toffler, A. & H., *War and Anti-war*, Little, Brown and Company, 1993.
- The Army and The Future: Land Forces in Australia and South-East Asia*, Edited by David Horner, Directorate of Departmental Publications, Defence Canberra, Canberra, 1993.
- Australia's Strategic Defence Policy*, Commonwealth of Australia, 1997.
- Future Directions for the Management of Australia's Defence*, Commonwealth of Australia, 1997.
- CGS Exercise 1996: The Future Battlefield*, Australian Army, 1996.
- The Defence of Thailand 1996*, Strategic Research Institute, Supreme Headquarters, March 1996.

BIOGRAPHY

Major Mark Eggler graduated from the Royal Military College, Duntroon in 1984 and was allotted to the Corps of the Royal Australian Electrical and Mechanical Engineers. He has served in a range of command, maintenance engineering and technical staff appointments. Major Eggler holds an honours degree in mechanical engineering, a Masters of Science in Defence Technology and is a graduate of the Royal Thai Command and General Staff College. He is currently posted to the Combined Arms Training and Development Centre as the Staff Officer Grade 2, Maintenance Engineering (Ground Systems).



BY CAPTAIN R.J. WORSWICK

We have done some shooting and field firing but our shooting standards are poor. I don't feel we are ready for war

J. Essex-Clark, 1991¹

A major infantry problem associated with devising a new system of tactics revolved around determining a proper role for the Lewis light machine gun within the infantry platoon. Unlike the Germans, who designed their 1918 offensive tactics around the Light Automatic Weapon, the British, in typical empirical fashion, merely introduced the Lewis Gun in greater and greater numbers as the need arose.

J. Essex-Clark, 1994²

INTRODUCTION

In the last decade of the 20th Century, the Australian Army has experienced a much-awaited technological revolution, with unprecedented acquisition of weapons and equipment technologies that it is hoped will see the Army into the 21st Century. Not suprisingly however, in an organisation historically resistant to change, there has been considerable reluctance to accept that some new items and ideas are as good as, if not better, than those that they have replaced. From an infantryman's perspective, the introduction into service of the F89 Minimi Light Support Weapon (LSW) has generated considerable angst, particularly amongst those who served when a 7.62 mm machine gun (M60 GPMG or the MAG-58 GSMG) was carried at section level. Indeed, criticisms of the LSW based solely on calibre (as opposed to weapon characteristics) are prevalent, but these are essentially superficial and do little to support calls for the reintroduction of a GSMG into the infantry section. This article will compare the characteristics of the LSW and GSMG and options for direct fire support at section level, in order to evaluate arguments for the reintroduction of the GSMG into the section.

WEAPON CHARACTERISTICS – CALIBRE

Advocates of the GSMG believe that the LSW represents a loss of capability, but generally associate capability with range and 'hitting power'. Before discussing range, and other weapon characteristics, it is necessary to dispel misconceptions relating to ammunition so that a balanced assessment of the weapons can be made. Firstly, it should be noted that SS109 5.56 mm ammunition is different to the ammunition previously fired by the M16. Anecdotes from the Vietnam conflict critical of the effectiveness of 5.56 mm ammunition are not relevant in the contemporary debate between the GSMG and LSW. Secondly, it should be noted that the SS109 round has greater lethality than its 7.62 mm counterpart. This is illustrated in figures 1 – 3. Figure 1 compares the wound ballistic characteristics (under laboratory conditions) for SS109 and 7.62 Ball F4 ammunition.

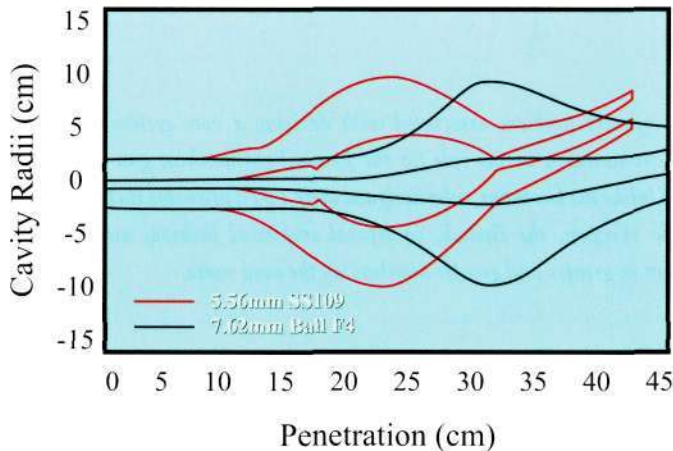


Figure 1. Wound Ballistic Characteristics
5.56 mm SS109 versus 7.62 mm Ball F4

What should be noted is that once inside the body, the SS109 'tumbles' earlier, fragments and comes to rest. From the physicists perspective (and I would suggest the perspective of a soldier wanting to kill/incapacitate his enemy), this represents an ideal transfer of energy because all of the kinetic energy is absorbed by the target. On the other hand, the 7.62 mm ammunition is less 'effective' because there is not a complete transfer of energy. This is demonstrated by figures 2 and 3 which respectively illustrate the probability of incapacitation and lethality.

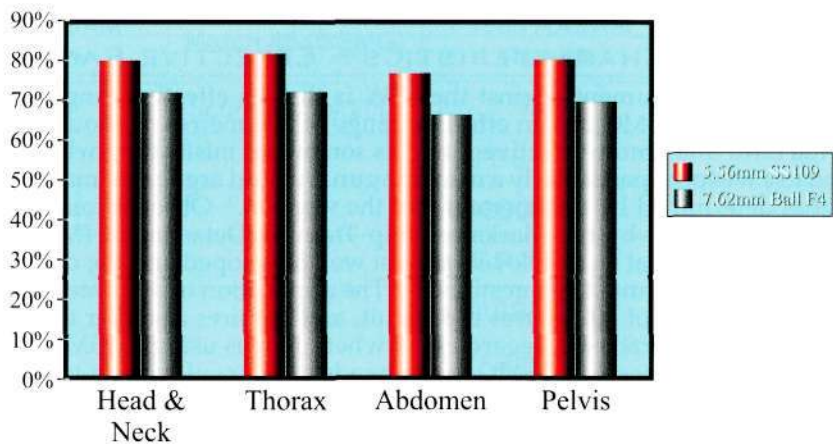


Figure 2. Probability of Immediate Incapacitation Given a Hit

The other major argument based on calibre is the limited destructive power of the 5.56 mm round. The 5.56 mm round experiences more 'drift' due to wind and is more likely to be deflected when penetrating foliage. The former is a null argument, as this is an environmental condition which soldiers are trained to account for. The latter is valid, although its applicability to northern Australia (assuming that our likely threat is low-level conflict in the north) is limited. Shooting through vegetation, whilst likely in combat, does not concur with the principles of marksmanship; therefore, this capability should not be afforded a high priority when evaluating ammunition types. Similarly, the use of small arms to destroy cover (logs, walls, etc—as 7.62 mm ammunition is capable of doing) is the wrong tool for the job and a waste of ammunition; and, this capability should also be afforded a low priority. There are other weapons within the section better suited and more capable of achieving this. Based on these arguments, lack of penetrative power is not sufficient reason to discount the 5.56 mm round.

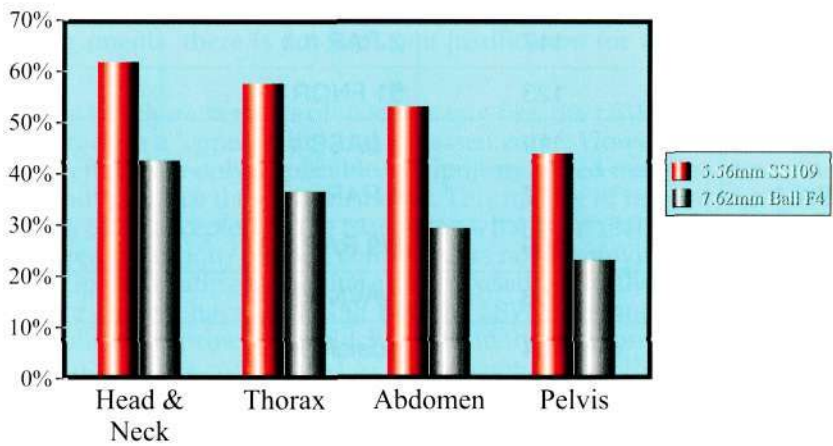


Figure 3. Probability of Lethality (within 30 minutes) Given a Hit

WEAPON CHARACTERISTICS – EFFECTIVE RANGE

The most common argument against the LSW is that its effective range is only 400 metres, whereas the GSMG has an effective range of 800 metres. It should be pointed out that the term 'maximum effective range' is somewhat misleading when discussed in relation to a weapon, particularly a machine gun. I would argue that maximum effective range is determined by the operator, not the weapon.³ Observations on machine gun courses conducted by the Marksmanship Training Detachment (MTD) support this. The MTD found that '... skill levels are not well developed and the operational effectiveness of sub-units must be questioned'.⁴ The application of accurate machine gun fire at ranges in excess of 400 metres is difficult, and requires a soldier to be properly trained and regularly practised, regardless of whether he is using a GSMG or an LSW. For all intents and purposes, a GSMG in the hands of an insufficiently trained soldier has the same effective range as an LSW. Table 1 illustrates this by comparing the results for GSMG and LSW practices at the Australian Army Skill at Arms Meeting (AASAM) in 1994 and 1995. Assuming that units have sent their best machine gunners to compete at AASAM, there is some cause for concern with regard to the results, particularly with respect to the ARA battalions.⁵ The shorter effective range of the LSW is a constraint, but this is a moot point if, as the AASAM results indicate, soldiers are not capable of employing the GSMG out to its maximum effective range.

**TABLE 1. COMPARISON OF AASAM RESULTS
FOR GSMG AND LSW**

| 1994 AASAM Results | Match 45 (GSMG) | 1995 AASAM Results | Match 45L (LSW) |
|-------------------------------|---------------------------|-------------------------------|---------------------------|
| <i>Team</i> | <i>Score (out of 200)</i> | <i>Team</i> | <i>Score (out of 200)</i> |
| 9 RQR # 1 | 175 | SOI | 153 |
| 9 RQR # 3 | 173 | 1 RAR # 1 | 146 |
| 9 RQR # 2 | 157 | 26 TPT SQN # 1 | 141 |
| 131 Div Loc Bty | 152 | 26 TPT SQN # 2 | 139 |
| MTD | 147 | 2 RAR # 1 | 133 |
| 1 RTB # 1 | 123 | 51 FNQR | 132 |
| AUR # 2 | 119 | 3 BASB # 1 | 123 |
| 49 RQR # 1 | 117 | 4 RAR | 118 |
| 3 RAR # 1 | 109 | 8/9 RAR # 2 | 113 |
| 1 RAR # 2 | 108 | 5 AVN REGT | 113 |
| 2/4 RAR # 1 | 104 | Adelaide Log | 108 |
| 1 RAR # 1 | 88 | 1 CDO COY | 100 |
| 42 RQR # 2 | 87 | 2 RAR # 2 | 91 |

| 1994 AASAM Results | Match 45 (GSMG) | 1995 AASAM Results | Match 45L (LSW) |
|---------------------------|---------------------------|---------------------------|---------------------------|
| <i>Team</i> | <i>Score (out of 200)</i> | <i>Team</i> | <i>Score (out of 200)</i> |
| 6 RAR # 1 | 86 | 1 AFDS | 83 |
| 49 RQR # 2 | 86 | HQ 3BDE | 80 |
| 3 RAR # 2 | 75 | 3 RAR # 1 | 75 |
| 2/4 RAR # 2 | 65 | 3 BASB # 2 | 68 |
| 5/7 RAR # 1 | 61 | 3 RAR # 2 | 54 |
| 6 RAR # 2 | 51 | 3 RAR # 3 | 19 |
| 8/9 RAR # 1 | 34 | 8/9 RAR # 1 | 15 |
| 8/9 RAR # 2 | 29 | 1 RAR # 2 | - |

Arguments based on the shorter effective range of the LSW compared to the GSMG should also be balanced against the following considerations. Firstly, with respect to the likely tasks that would be assigned to an (Australian) infantry battalion on operations in the north of Australia or as part of a UN peacekeeping force, recent experiences have shown that operations at company, platoon and even section level are becoming the norm. As the size of the force is reduced, so too is the range needed for the provision of mutual fire support. Second, few operations in these scenarios are conducted without the support of wheeled/tracked vehicles which have an integral direct fire support capability. Third, assuming that the infantry battalion is restructured as Restructuring the Army (RTA) is realised, the embedded fire support assets have the capability to provide support at distances in excess of 400 meters. Finally, in both offensive and defensive operations, the coordinated employment of all weapons available to a commander implies that ideally, machine guns will engage the enemy only once they have closed to within covering fire safety distances, which are less than 400 metres. The diverse range of tasks that an infantry platoon can be called upon to conduct necessitates a capability to provide direct fire support at ranges in excess of 400 metres. However, based on the preceding arguments, there is not sufficient justification for this capability at section level.

With regard to the characteristics of machine gun fire, the LSW is often criticised for its inability to produce a 'cone of fire' and a 'beaten zone'. However this is a misconception, as these effects are only applicable to tripod-mounted machine guns. A GSMG on a bipod will not produce these effects either. This misuse of terminology (with respect to the LSW) is often accepted as the reason for what is, in reality, poor shooting. It has also contributed to section/platoon commanders not employing their LSWs to best effect. The principles for siting a machine gun are based on the theory of machine gun fire. Because junior leaders have been told that the LSW does not conform to this theory, they do not follow the principles, which results in the weapon failing to achieve its potential. This in turn has contributed to the perception that the LSW is inferior to the GSMG. In order to employ a machine gun to best advantage, it is essential that the characteristics of the gun be fully understood, and that the gun is not given a task which it is not capable of carrying out.⁶ For an LSW, at ranges greater than 400 metres it has been determined that the dispersion of a burst of rounds from an average firer would be such that the fire would be termed 'ineffective'.⁷ However, this is a deficiency that can

be addressed. Although I have stated that the skill of the operator determines effective range, other factors such as the weapon's construction (especially its weight), its rate of fire and the length of the burst, contribute significantly to the effectiveness of fire.

WEAPON CHARACTERISTICS – EFFECTIVE FIRE

The rate of fire and length of the burst affect the ability of an operator to apply accurate fire. Put simply, as the weapon completes its cycle of operations, it vibrates and exerts force against the operator, making it difficult for him to maintain the same point of aim for successive rounds within a burst. When fired from a bipod, no matter how well-trained the firer, it is not possible to control long bursts with sufficient accuracy to achieve effective fire. When compared with a GSMG, these factors are exacerbated by the LSW's higher rate of fire. Whilst the LSW cannot be 'balanced' like some other machine guns, there are differences in the rates of fire between individual weapons (which are most probably the result of differing clearances created during the machining of the gas systems). A gun firing at too high a cyclic rate will scatter shots in a burst up to 100 per cent more than they would be when firing at the correct rate.⁸ Ensuring that the gas system is clear of carbon residue will contribute to increasing the effectiveness of the fire by reducing it to a more manageable rate. Ensuring that the length of a burst is limited to two or three rounds will also assist in controlling the gun. Finally, the light-weight construction of the LSW when compared with the GSMG contributes to the dispersion of a burst. If the LSW had a heavier barrel, it would have a greater ability to resist the forces of torque and recoil acting against the firer.

In concluding a comparison of the two machine guns based on weapon characteristics, the differences between the two are not sufficient in themselves to favour one of the weapons outright. Both are suitable as a direct fire support weapon for an infantry section. However, before examining the options for the employment of each machine gun, there are two further points that should be made. First, although difficult to quantify, hearing the machine gun fire engenders within the section a perception that it is being supported (whereas for the enemy it means that there is a force to reckon with), which may generate a psychological advantage. Because the LSW sounds similar to the Steyr, it may be difficult to differentiate between the two. Thus, the GSMG may offer better 'reassurance' to the section, and may also be a better tactical reference point for manoeuvring troops. Finally, to accept that the LSW is only capable of firing effectively to 400 metres underestimates the true capability of the weapon. I believe that the effective range of the LSW is at least 600 metres, and anything less will only serve to perpetuate poor shooting skills amongst soldiers.

EMPLOYMENT OF THE MACHINE GUN

Historically, the machine gun has been the weapon around which an infantry unit has based its plan (whether in attack or defence). This explains why tasks for, and firing of, machine guns has traditionally been controlled at the highest level. It also explains the resistance to the introduction of the LSW, which from a commander's perspective, takes away his control over the unit's firepower. However, recent operational experience and current strategic guidance suggests that these are somewhat antiquated views. Modern technological advances combined with developments such as Project WUNDURRA have seen the emphasis shift from the soldier simply operating a weapon, toward the soldier as a combat system. This necessitates a review of how weapons such as the LSW and GSMG are best employed, to ensure that doctrine and tactics progress at a rate commensurate with technology.

The significant difference between the LSW and GSMG is that the GSMG is a crew-served weapon. To be effectively employed, the GSMG requires three men. The operator is assisted by a Number Two who provides close protection, feeds ammunition and assists in remedying stoppages; and the section 2IC who provides fire control orders and links the 'gun group' to the remainder of the section. The LSW on the other hand is an individual weapon, with the operator having to fire and maintain the weapon without assistance. The current trend is for the LSW operator to move and acquire targets independently, although this seems to have evolved because section 2ICs (and Number One Riflemen) have wrongly assumed that as the LSW is an individual weapon, they are no longer responsible for its employment. To achieve the best results from the LSW, it too should be employed as if it were a crew-served weapon. Whilst it is not necessary to have the Number Two assisting with ammunition and stoppages, he should provide protection and the 2IC (or Number One Rifleman) should be controlling the fire in situations that deem this necessary.

From a tactical perspective, the provision of two LSWs at section level provides commanders with greater tactical flexibility when compared with a single, crew-served weapon. Significantly, two machine guns allow a section commander to change the direction of an assault without reassigning troops and whilst maintaining direct fire support. It also ensures that both the assault and fire support groups have the means to repel a counterattack, or provide a firm base from which this can occur. This could be achieved by the employment of two GSMGs; however, the loss of manoeuvrability and manpower (with each GSMG requiring a dedicated Number Two) outweighs the tactical advantage to be gained. A compromise could be the combination of a GSMG and LSW, which would provide extra range and 'hitting power', whilst still achieving the additional tactical flexibility of two machine guns. However, there is still a loss of manoeuvrability; and, therefore, loss of tactical initiative and flexibility. In the one LSW and one GSMG section, the GSMG must be utilised as the direct fire support weapon because employing it in the assault group contradicts all arguments for its inclusion in the section. Further, when compared with the GSMG, the LSW is better suited to the fight-through and to close or urban environs, where an individual is more likely to be embroiled in his own fight. When evaluating the employment of the LSW or GSMG within a section, the solution must provide optimal firepower and manoeuvrability. Given earlier arguments against the range and 'hitting power' of the GSMG, and the tactical limitations of manoeuvring the GSMG, the re-introduction of the GSMG at section level is not warranted.

CONCLUSION

The intent of this article has been to evaluate the options for direct fire support at section level, in order to determine whether the re-introduction of the GSMG into the section is justified. When compared with the GSMG, the LSW has greater lethality, increased manoeuvrability and, therefore, tactical flexibility. At section level, the LSW has sufficient range, given the operations that the ADF is likely to undertake in the defence of Australia or as part of a UN force. The LSW does have limitations which can be addressed, and consideration should be given to modifying the gas system and designing a heavier barrel. More important, however, is the need for a concerted education campaign to dispel the misconceptions surrounding the LSW, particularly amongst junior leaders. Earlier in the article, it was said that the LSW was seen by some as a loss of capability. Indeed, there has been a loss of capability. I attribute this to a loss of skill (identified by the MTD and demonstrated by the results for the GSMG and LSW at AASAM) – not to the introduction of the LSW. The GSMG is a very good machine gun, and whilst its role within the platoon and company deserves further consideration⁹, there is no advantage to be gained from carrying it within the section. ☒

ACKNOWLEDGEMENTS

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ENDNOTES

1. Essex-Clark, J. *An Infantryman's Story*, Melbourne University Press, 1991, p. 75.
2. English, J. *On Infantry*, Praeger Publishers New York, 1984, p. 58.
3. Note that *MLW 2-9-4 Marksmanship* states that effective range for a machine gun is a combination of the mechanical ability of the gun and the capability of the firer. However, given the design technology of modern weaponry, I believe that the mechanical ability of the gun can be an assumed constant, thus my statement that maximum effective range is determined by the operator.
4. Study of ADF Small Arms Training and Ranges, p. 18.
5. The following should be noted:
 1. The practices for the GSMG and LSW are different; and, for this reason, the figures cannot be used to compare the accuracy of one weapon against the other. However, observations of the general standard of shooting can be made.
 2. Both practices have a highest possible score of 200.
 3. 1994 was the last year that ARA battalions fired the GSMG. From 1995, ARA units used the LSW.
 4. Not all team results have been listed. Selected results reflect the top 10 places, then ARA battalions.
6. *MLW 2-9-4 Marksmanship*, 1995, p. 3-3.
7. To be deemed 'effective' the Royal Armaments Research and Development Establishment determined that a bullet must strike or pass within one metre of a man to suppress him, and that a bullet must pass into this area at a rate of one per second to keep him suppressed.
8. *MLW 2-9-4 Marksmanship*, 1995, p. 3-12.
9. For example, see Forbes, A. 'The Infantry Platoon of the future - A need for change', *Combat Arms* 1/98, who proposes the establishment of a Support Section (with 2 GSMG) within the Rifle Platoon.

BIOGRAPHY

Captain Worswick graduated into RAINF from ADFA in 1991 and has served in a number of regimental ap-pointments in 1RAR, including operational service in Somalia in 1993. He has also served at 1RTB, Head-quarters AST and on the staff at ADFA. He holds a Bachelor of Science majoring in Geography and a Mas-ters in Defence Studies. In May 2000 he will take up an appointment as a United Nations Observer, with UNTSO in the Middle East.

SURFACE-TO-SURFACE MEDIUM ARTILLERY

Requirements Beyond 2000

BY MAJOR R.W. OVERHEU

Power is not revealed by striking hard or often, but by striking true.

Honore'de Balzac

INTRODUCTION

Australian Defence Force commanders in the future will have the means to influence the enemy with offensive support that can cover every corner of the battlefield – not strike every target, but dominate the enemy with superior firepower at the decisive point. Armed with superior command, control and communication systems, commanders will demand highly mobile and extended range indirect fire weapon systems that can exploit their decisiveness with immediate and accurate responsiveness. This dynamic factor is reshaping medium surface-to-surface artillery for the future.

A key characteristic of all surface-to-surface artillery is its ability to engage targets throughout its sphere of influence without redeployment against what are likely to be fleeting targets of opportunity. Surface-to-surface artillery, with the introduction of modern extended range and improved ammunition types, has the inherent ability to direct its firepower quickly anywhere within its umbrella of coverage without physically moving. This advantage exists to a proportionately greater degree with the extended ammunition range of medium (155 mm) surface-to-surface artillery than that of the light gun (105 mm).

SCOPE

This paper is based on the requirement to fulfil the role of modern surface-to-surface medium artillery beyond 2000, that role being: 'to support the other arms and Services by establishing such fire supremacy in the area of operations that the enemy can neither interfere with our operations nor effectively develop his own'¹. Whilst the 105 mm L119 Hamel Gun and 81 mm mortar are able to support credible contingencies in northern Australia, this paper will focus on surface-to-surface medium artillery capability requirements in support of armour and mechanised infantry 'combined arms' manoeuvre units. The scope of this paper is limited to a discussion of likely credible contingencies, generic capabilities and mobility of current medium towed artillery and a likely replacement weapon system, including its place in dispersed operations.

AIM

The aim of this essay is to discuss the requirement and applicability for the procurement of medium self-propelled (SP) surface-to-surface artillery for beyond 2000.

CREDIBLE CONTINGENCIES

Successive reviews of the strategic basis of Australian Defence Policy have noted the advantages an opponent might see in a campaign of sustained low level military pressure against Australia. The use of military force to harass remote settlements and other targets in northern Australia, our offshore territories and resource assets, and shipping in proximate areas could be decided upon as an attempt to demonstrate Australian vulnerability and thereby force political concessions. Attacks could be widely dispersed and unpredictable, meaning that relatively modest military pressure could oblige Australia to respond with quite disproportionate effort.

The distribution of potential military targets in northern Australia poses specific problems with respect to the deployment and employment of existing indirect fire assets. It becomes extremely difficult to provide and coordinate conventional indirect fire support over such a large area of operations with the limited mortar and surface-to-surface artillery that currently exist. The requirement to disperse surface-to-surface artillery may be due to the need to simultaneously support widely dispersed manoeuvre units or to increase the survivability during other operations. The current ability to deploy the medium gun for a protracted period is also very limited. This gives rise to a need for long range and highly mobile dispersed indirect fire units to provide the necessary coverage. However, it should be noted that this requirement contradicts the primary rule of concentration — the dispersal of effort can be fatal to the effective employment of indirect firepower.

CURRENT CAPABILITIES

The current in-Service medium gun is the 155 mm American M198 Towed Howitzer. As long as medium surface-to-surface artillery is in range, any target that can be acquired can be engaged. This applies to day or night, over any terrain and in any weather. The essential elements of this statement are firepower (or terminal effect), range and target acquisition. In order to substantiate this assertion, it is necessary to examine each of these existing elements and to understand the current capabilities of medium towed surface-to-surface artillery.

AMMUNITION

The M198 is an accurate gun, which fires the following ammunition types: high explosive (HE), HE rocket-assisted (HERA), precision guided munitions (PGM), controlled variable time (CVT), mechanical time super quick (MTSQ), white phosphorous (WP), smoke base-ejecting (smk BE) and illumination (illum). Although not currently employed by Australian Artillery, improved conventional munitions (ICM) are also available for the 155 mm calibre. It fires three separate charge systems: Green Bag, White Bag and Red Bag. In-Service propellants currently provide a maximum range of 19 500 metres (HERA, White Bag Charge 7). The Red Bag propellant system permits the gun to achieve its full potential, firing at ranges up to 30 100 metres. This compares to maximum planning ranges of 11 400 metres for the L119 Hamel gun and 4 200 metres for the 81 mm mortar. The ammunition and charge system selected will be dependent upon the possible tasks, which include engagement of point targets (using PGM), area denial, conventional destruction, neutralisation, screening, blinding and illumination missions.

SURVEY

To ensure accuracy and timely response, it is vital that the guns fixation and orientation are as precise as possible. This assists in providing the most accurate opening engagement, allowing the fall of shot of dispersed multiple firing units to be co ordinated where areas of coverage overlap. Another equipment introduced into service with particular significance for the deployment of surface-to-surface artillery is the Global Positioning System (GPS). The employment of GPS can be an aid in navigation and assists in the provision of basic fixation in poorly mapped or featureless country where there is a dependency on the receiver.



Global Positioning System

SURVEILLANCE AND TARGET ACQUISITION

Providing surface-to-surface artillery is in range, any target that can be acquired can be engaged. The next step is to ensure that the capabilities of current surface-to-surface medium artillery are utilised. A solution is to ensure that Joint Offensive Support Teams (JOSTs – formally FO Party) are appropriately equipped with modern surveillance and targeting devices and deployed to provide optimum coverage of an area. Where specialist artillery observers are not available, nominated officers and NCOs are trained in the all-arms call for fire.

To ensure the successful detection and identification of targets, it is essential to suitably equip personnel who are going to initiate the engagement. The NINOX project will provide unprecedented access to night observation/sight devices for those trained in coordinating indirect firepower. It is also vitally important that target locations are as accurate as possible to minimise the requirement for adjustment and maximise shock effect. The LASER range finder, with which JOSTs are equipped, is an excellent tool for quickly and accurately fixing the target.

TOWED MOBILITY

The ability of indirect fire assets to rapidly deploy and redeploy within a large area of operations is crucial for dispersed operations. The potential for attacks to occur against widely dispersed targets necessitates the capacity for rapid mobility to provide the commander with the means to react to contingencies as they occur. Given the weight and size of the gun tractor, surface-to-surface medium artillery in the towed configuration cannot be taken too far off sealed road arteries. To do so, a manoeuvre commander may risk losing his indirect fire support capability. Therefore, the detailed planning of deployment routes along sealed roads and formed tracks within northern Australia is a very important consideration in terms of organisation for battle.

The mobility of towed surface-to-surface medium artillery is essentially commensurate with the role of providing fire support. For deployment to the area of operations, towed medium artillery is as 'portable' as armoured vehicles. The gun has been successfully transported by C-130 Hercules aircraft, CH-47 Chinook helicopter, Landing Ship Heavy, rail and road fleet transport. The medium gun's on-road mobility is good in its current configuration with the Mack Gun Tractor; however, off-road mobility is limited to 25-40 kilometres per hour and many terrain types are impassable in the towed configuration.

SELF-PROPELLED MOBILITY

Wheeled SP artillery is characterised by great strategic and tactical mobility. The mobility of an SP vehicle is probably the biggest single factor contributing to its excellent survivability. In the case of a wheeled vehicle, the size of the wheels and the run flat tyres ensure that the vehicle can still move, even if it detonates a landmine. However, the implications of the size of the vehicle and the track signature when moving cross-country must be considered in deployment planning.

PROPOSED SOLUTION BEYOND 2000

Armoured, cavalry and mechanised infantry manoeuvre units are ideally suited to dispersed operations. The reasons for this include their organic communications, inherent mobility and ability to bring immediate fire to bear on a target. Therefore, there is a requirement to ensure that supporting medium surface-to-surface artillery share these essential attributes with such manoeuvre elements. Suitable in-Service and continually developing wheeled SP weapon platforms that may be incorporated in future Army trials include the South African 155 mm SPG6 (six-by-six) High Mobility SP Gun/Howitzer; the Swedish Bofors 155 mm FH-77 (six-by-six) SP Artillery System; and French Giat Industries CAESAR 155 mm SP Gun. With continuous development of SP vehicle design, it is evident that whatever weapon platform is considered for trials and procurement should be able to be readily mounted on a wheeled SP vehicle.

FUTURE TRIALS

Although there are numerous wheeled and tracked SP weapon system options available, the SPG6, characterised by a highly mobile wheeled platform suitable for all terrain, limited manpower requirements and autonomous firing system would be a good contender for future trials to be conducted in northern Australia. Frequent, rapid deployment combined with highly effective long range ammunition and a high rate of fire ensures that the principles of surprise, concentration, flexibility, offensive action and survivability are attainable under all conditions.²

The SPG6 is a wheeled 155 mm, 45-calibre SP gun, utilising the same ballistic system as the G5; however, the turret is mounted on a special six-by-six wheeled vehicle. The SPG6 is a complete system of the vehicle and the ammunition system. This includes a meteorological station, muzzle velocity analyser, fire control system and a helmet radio communication system. The unit, crewed by six personnel, can function autonomously for considerable periods and over long distances. A well-trained crew can fire four rounds per minute; firing with maximum charge can be continued for up to 15 minutes. The hull of the SPG6 is built of welded steel armour with protection against a variety of threats, including artillery splinters. It is fitted with fuel tanks large enough to enable it to cover 700 kilometres on normal roads at an average speed of 80 kilometres per hour or 30 kilometres per hour cross-country. The SPG6 is supported by a six-by-six or eight-by-eight cross-country vehicle carrying the projectiles, charges and fuses.



SPG6 Wheeled 155 mm, 45-calibre SP Gun

ADVANTAGES/DISADVANTAGES OF SELF-PROPELLED ARTILLERY

The South African Army weighed the options of wheels or tracks for their new SP system and decided firmly in favour of wheels. The possible area of operations for the SPG6 is likely to be some distance from main bases, perhaps up to 1 000 kilometres. For such tasks, tracked vehicles are not only slower on hard roads but more likely to break down.³ Wheeled SP artillery systems are not only cheaper to operate and maintain than tracked vehicles but they also possess a greater strategic mobility, and in most cases have an equal, if not better, tactical mobility. While the enhanced mobility of the SP gun allows for rapid displacement across the battlefield, this capability may at times be affected by the ability of the organic logistic vehicles to match the mobility of the SP itself.

ENVIRONMENTAL IMPACT

The introduction of any SP vehicle into northern Australia will have an environmental impact, particularly in the wet season. Wheeled vehicles could be expected to cause less damage to the environment during the dry season than tracked vehicles and they are likely to be more acceptable to local residents as they would be expected to cause less damage on unsealed roads. Flooded and wet terrain within Army training areas during the wet season are likely to affect the mobility of any wheeled SP vehicle. The relative environmental and mobility impacts of tracked and wheeled SP vehicles can only be assessed following evaluation in the north.

ENHANCED SURVEY

The characteristic of rapid deployment of the SPG6 is the product of the combination of mobility and the Gyroscopic Laying System (GLS). The SPG6 can rapidly displace to a new firing position and autonomously orientate and fix itself in a very short time. The implications of this characteristic on deployment include

- * deception and surprise can be achieved with very little planning;
- * system unavailability due to redeployment is drastically reduced;
- * the 'shoot and scoot' technique; and
- * the autonomous selection and preparation of alternative firing positions can be easily employed.

The onboard GLS can provide a greater level of accuracy to the commander of the SPG6 with respect to orientation without external reference points, navigation capability, firing position fixation, and lay for line and elevation. The implications for deployment include the requirement to update the system every 10 kilometres. Accurate survey would be reliant on previously established surveyed points prior to deployment within the area of operations. No preparation of the position would be required except for confirmation of the location of the firing position.

RAPID DEPLOYMENT

Whilst deployment types will not fundamentally change with the introduction of an SP weapon platform, procedures will change dramatically. Firstly, deployment of the SPG6 will allow more areas on the battlefield to be utilised as firing positions. This critical advantage is attributable to the tactical mobility of SPG6; as such, there are few places on the battlefield that it cannot traverse.⁴ Movement to deployment areas is not dependent on route reconnaissance and despite more frequent deployment, the system's unavailability is greatly reduced. Redeployment can be conducted rapidly over longer distances, thereby contributing to economy of force, security, surprise and survivability.

CONCLUSION

As new technologies proliferate, indirect fire weapon systems become more versatile, adaptive, mobile and lethal. Highly mobile, wheeled SP systems will be able to engage the enemy in many different ways. With this comes the premise of information operations and shared situational awareness, allowing the commander to determine where and when indirect firepower is required. This change in focus requires new equipment, structures and techniques in order to break from existing indirect firepower employment and deployment procedures.

There is no easy solution to the challenges of providing concentrated fire support for units operating in dispersed areas in northern Australia, especially with current financial constraints on defence spending. However, the procurement of a highly mobile SP weapon system will provide ADF manoeuvre forces with the ability to engage medium to long-range targets and the ability to rapidly redeploy to remote areas as the need arises. Rapidly moving artillery manoeuvred to fire when and where ground forces need them most is a key factor in the success of offensive operations. In order to maintain compatibility with highly mobile manoeuvre elements, it is essential that the RAA conduct extensive trials, identify a replacement weapon platform, and subsequently procure a highly mobile SP weapon system post-2000. ✕

ENDNOTES

1. *Manual of Land Warfare 2-1-1, Employment of Artillery*, 1995, p. 2-1.
2. South African National Defence Force G6 Doctrine, annexure B, p. 1.
3. Foss, C.F., 'Armcor's 155 mm G6', *Jane's Defence Weekly*, 16 May 1987, p. 957.
4. *South African National Defence Force G6 Doctrine*, annexure B, p. 3.

BIBLIOGRAPHY

1. Biggs, J.D., *Considerations in Contingency Operations*, 1992.
2. Foss, C.F., 'Armcor's 155 mm G6', *Jane's Defence Weekly*, 16 May 1987.
3. *Manual of Land Warfare 2-1-1, Employment of Artillery*, 1995.
4. Smith, J.P. 'The employment of artillery in low level conflict', *Combat Arms*, 1992, Army Doctrine Centre.
5. *South African National Defence Force G6 Doctrine*, annexure B, June 1997.

BIOGRAPHY

Major Overheu graduated into RAA from RMC in 1989 and has served in a variety of regimental appointments in artillery. He has served as a doctrine officer at the School of Artillery and most recently was the Adjutant of 8/12 Medium Regiment. In December 1998 he took up his current appointment as a liaison officer to the US Army Field Artillery School.



DOCTRINE VERSUS CAPABILITY

Towards a Mature Mechanised Combat Engineer Capability

BY MAJOR M.B. RYAN

Engineers must have both the equipment and the professional competency to assist in general movement, attack, defence or retrograde...these follow-on forces must be totally responsive to valid combat requirements, thus making the supported unit truly combat effective. A basic understanding of this integrated force spells combat power, and it is with this ingredient that hills are taken, rivers crossed and enemies killed or captured.

Major General George S. Patton¹

INTRODUCTION

Patton well understood the requirement for a balanced force when fighting. One of the most successful ground commanders of the Second World War, Patton relied not only on his tankers and infantry to win his battles, but also on the various support arms and their professional competency. This all contributed to what he called the mechanised system.²

Combat engineers are a key element of this mechanised system. They provide the battlefield mobility of the manoeuvre forces, and deny freedom of movement to the adversary. One important area where the combat engineer supports friendly mobility is the breaching of obstacles.

The use of obstacles, landmines in particular, to disrupt tactical movement began in World War II. Beginning with the campaigns of North Africa and spreading to all theatres, enemy mines and obstacles stopped or affected well-planned armoured and mechanised attacks by friendly forces. Expedient mines, fusing devices, and other mine warfare techniques were subsequently used in Korea, Vietnam and the Gulf War to harass and create confusion. Unprepared and ill-equipped soldiers paid a heavy price when forced to deal with mines and other obstacles.

Mines, coupled with anti-tank ditches, barbed wire and suitable terrain to form anti-personnel and anti-vehicle barriers, remain an enduring feature of land warfare. As a consequence, the methods to breach obstacles have continued to be developed and refined over the past half century in conflicts from Alamein to Kuwait.

One of the Battlespace Operating Systems (BOS) identified in the Army's new keystone doctrine, *Land Warfare Doctrine 1 – The Fundamentals of Land Warfare (LWD 1)*, is Mobility and Survivability.³

LWD 1 defines Mobility and Survivability as:

...all systems and personnel used to maintain freedom of movement and protection to friendly forces, while denying movement in order to destroy enemy forces directly or indirectly by enhancing the effectiveness of friendly weapons systems...⁴

Royal Australian Engineers (RAE) contribute to this BOS through the provision of mobility, counter-mobility and survivability support to land operations. This paper focuses on the provision of mobility support. To provide this, the Corps has recently developed an expanded mechanised combat engineer capability. However, this mechanised combat engineer capability has only extended to mounting combat engineers in M113s and training in provision of limited mobility support from these vehicles. Apart from this, there has been no introduction of mission essential mechanised combat engineer equipment.

During the raising of this limited mechanised engineer capability, there has been a revolution in our doctrine. The RAE has adopted new mobility doctrine, in most cases based on US Army doctrine. Consequently, a gap has appeared between the doctrine and capability of the mechanised combat engineer regiment. Using LWD 1 terms, in our Fighting Power⁵ there is a disconnect between the intellectual component and the physical component of combat engineering support to mechanised forces in the Australian Army.

This essay aims to examine this gap between the intellectual (doctrine) and physical (capability) in the provision of mechanised combat engineer mobility support. In the course of this examination, options for the provision of capability will be covered. Not only will the types of capability required be examined, but also, and very importantly, who should own them. It is hoped that this essay also provokes comment and discussion not just within the RAE, but within those Corps which will directly benefit from a mature, mechanised combat engineer capability.

THE INTELLECTUAL ASSET

The range of mobility support provided by combat engineers encompasses the most basic of tasks, such as culvert and combat track construction through to complex, demanding operations such as route clearance, gap crossing and obstacle breaching under enemy direct and indirect fire. The Corps has a large body of doctrine to support these operations.

Much of this doctrine has become available through interaction with other large armies. In particular, the experience of the other ABCA nations has provided a wealth of doctrine on the employment of combat engineers. Exchange US Army instructors at the School of Military Engineering have provided an additional resource for production of doctrine. A result of the efforts of those producing doctrine for RAE has been that our doctrine relating to mobility support is now 'on par' with that of first rate armies such as the US Army and the British Army. We have developed procedures which could be considered 'world's best practice'.

Combat Engineer Regiments (CERs), and 1 CER in particular, have integral mobility assets.⁶ These include road plant as well as mine detectors, Bangalore Torpedoes and mine prodders. A range of mobility tasks can be undertaken in the field with the current equipment held within the unit. These can be managed in all but the most hostile environments (specifically, under enemy direct or indirect fire). And, it is here that the most obvious gap between our doctrine and capability exists with the mechanised CER. To understand this gap, it is necessary to briefly examine the Army's mechanised capability and the type of operations it may be required to undertake.⁷

The Army's primary mechanised capability resides in the Darwin/Sydney based 1st Brigade. This formation trains for both warfighting and military support operations.⁸ Within this construct, 1 CER is required, among other responsibilities, to support the mobility of the manoeuvre elements of the 1st Brigade. Offensive operations are one of the warfighting responsibilities. Enunciated in *LWD 1* is the requirement, as part of warfighting, to conduct obstacle crossings. These are complex, combined operations requiring a range of capabilities — from indirect and direct fire support to obstacle reduction capabilities. It is here, when we must undertake obstacle crossings, when it is very likely that an adversary will attempt to interfere with us, that the void between our doctrine and capability becomes apparent.

Doctrine recognises that we will not always be able to go around obstacles.⁹ There is a range of circumstances where we will have to conduct an obstacle breach in order to assault an adversary's position. This is recognised in our own *MLW 1.1.4 Formation Tactics* and in the doctrine of most armies, including those with a huge wealth of experience and/or resources such as the US, British, German, Russian and French armies.

Obstacle breaching is a combined arms activity and is generally an enabling operation for an assault or transition to another phase. It is a complex, demanding task, requiring coordination, timing and detailed rehearsals. Our current doctrine guides us on the conduct of the breach. The acronym SOSR¹⁰ sums up the four steps of any breaching operation. For engineers, our key contribution comes in the reduction¹¹ of the obstacle.

At this point, it must be assumed that the obstacle we are breaching has an intent. It is placed there by an adversary to channel us, to delay us, to disrupt our movement and/or deployment, to force us into ground where he can fix us and engage us with his direct and indirect weapon systems. So the breach, and therefore the actual obstacle reduction, will be conducted with interference by the adversary. It is necessary, therefore, that those engineer assets undertaking the reduction of the obstacle be protected assets.

What type of obstacles will we be required to breach? Up until the present, the main types of man-made obstacles have comprised first and second generation¹² anti-tank and anti-personnel¹³ blast and fragmentation mines, wire, berms and anti-tank ditches covered by observation and fire — where possible using terrain to enhance their effect. Future obstacles, may include METAL STORM type weapons, smart mines able to be turned on and off on command and fully integrated into the adversaries C2 systems or even intelligent mines able to autonomously change position or effect to heal breaches.¹⁴

We must keep one eye on the present and one eye on the future when examining what capability best fits the requirement to conduct an opposed obstacle breach.

BRIDGING THE INTELLECTUAL - PHYSICAL GAP

Current methods for breaching obstacles differ very little from country to country. The doctrine of most armies state the need for hand breaching, explosive breaching and mechanical breaching.¹⁵ Hand breaching uses prodders and mine detectors. Explosive breaching uses Bangalore Torpedoes and projected line charge (or explosive mine clearance devices—EMCDs) weapons. Mechanical breaching utilises ploughs, flails, rollers and dozer blades.

In the breach of a complex obstacle¹⁶, a combination of explosive and mechanical means of obstacle reduction is employed. A roller system pushes to the forward edge of the obstacle group to find the edge of any minefield. An EMCD is then deployed across the minefield to either detonate or physically destroy mines through blast and explosive over pressure. This method can be relied on to destroy up to 75 per cent of mines along a seven to eight metre-wide lane. A mechanical means, usually a plough, is then used to 'prove' this lane. This lane is then marked and trafficked by an assault force. All of the above is normally carried out by separate vehicles. A reserve of 50 per cent in lanes and/or equipment is normally required.

In reality, EMCDs are notoriously unreliable, with failure rates of up to 50 per cent. However, the capability to destroy the majority of mines in a minefield prior to committing vehicles to the reduction is critical. So that we are not restricted to conducting this remote destruction of mines purely by explosive means, this phase of the reduction should perhaps be called, 'reduction preparation'. If we free ourselves of the limitation of explosive means, other ways to conduct reduction preparation may become apparent.

Both the US and French¹⁷ armies mount electronic devices on the front of their engineer mine clearance vehicles for this purpose - these devices detonate mines with electronic fuses. Perhaps even a METAL STORM type weapon could be used to saturate lanes with ground penetrating slugs to physically destroy most mines along a designated lane prior to the passage of the 'proving' vehicle. Using explosive means or otherwise, our Corps and the army currently lacks the capability to conduct reduction preparation. This is a critical deficiency.

Once we have conducted this reduction preparation, it is time to 'prove' the lane. This is a hazardous activity because not only must the crew of this vehicle clear those mines remaining in the chosen lane, but they must do it under direct and/or indirect fire (and probably with adversary electronic attack disrupting communications and our own smoke hindering visibility). This 'proving' can be done using rollers (slow but able to sustain three to five mine blasts); ploughs (quicker, but difficult to change axis and can only sustain one to two mine blasts) or flails (slower, but able to withstand multiple blasts).

Regardless of the method, this is a vital capability in the reduction of the obstacle. The Army currently has a very limited roller and plough capability, mounted on Leopard main battle tanks (MBTs). This is more of a self-extraction capability and can only be mounted on 1 AR MBTs, taking up a valuable, and very limited, resource required for the assault. It also relegates several gun tanks to the enabling activity (the breach) and ensuring that they will probably not be available for the main game—the assault. There is no flail capability in the Army.

If this capability were to be mounted on a non-gun tank Leopard chassis (such as an armoured recovery vehicle-medium) and held within the mechanised CER, the armoured/mechanised battle group commander would not have to give up a troop of gun tanks for reduction duties. The reduction would be carried out by engineer assets, allowing the manoeuvre commander to focus on the most important part of the

attack – the actual assault on the adversary position. Not only would it allow a clear focus for the manoeuvre commander, it also would decrease the training liability for the manoeuvre unit having to maintain the roller/plough capability. The vehicle also has mobility characteristics matching the vehicles it supports – MBTs and M113s.

Another important requirement is the ability to reduce ditches and berms. This can be done with a bulldozer blade, preferably a protected system. While MBTs have some dozer blades mounted on them, once again an important gun tank is used to reduce an obstacle. The latest US Army and French Army¹⁸ engineer vehicles both mount a V-shaped blade applicable for both dozing and full width ploughing. These are not gun-tanks, but specific engineer protected vehicles.

So, we have found the obstacle and reduced it. To ensure that the assault force is able to safely traffic the lanes through the obstacle, it must be marked. Initially, this will be a quick, temporary marking system. This activity, like the rest of the breach, must be carried out under the interference of the adversary. At present, this is done by throwing bright orange witches hats out the top of an armoured personnel carrier by sappers. The dangers in this activity, when airburst artillery is probably present, are obvious. An automatic marking system would alleviate this situation. Mounted on the rear of the 'proving' vehicle, a lane could be quickly proved and marked with soldiers remaining under protection.



Photo Courtesy of the Army Magazine

CONCLUSION : TOWARDS A MATURE CAPABILITY

Not only are there systems available and in service with many armies, to undertake a protected breach, but also our own doctrine specifies the use of protected breaching capabilities.¹⁹ Australian Army doctrine quite clearly includes the use of protected roller, dozer and plough systems, in addition to EMCDs²⁰, as part of the breaching process.

It is these capabilities, missing from the mechanised CER, which seriously limit the unit in its provision of close combat support to the manoeuvre elements of 1st Brigade in a breach operation. The mechanised CER in its current format lacks the ability to conduct these breaches. It is not able to breach an obstacle belt, under direct or indirect fire, containing anti-personnel and anti-vehicle barrier systems currently available worldwide.

A dedicated, protected breaching capability is essential. The mechanised CER needs a reduction preparation capability, a protected proving capability, a protected blade capability, and the capability to mark obstacle lanes while protected.

The addition of these capabilities will bring the capability (or physical component) of the mechanised CER in line with its doctrine (or intellectual component) in warfighting. Not only will the addition bring our capability in line with doctrine; most importantly, it also will allow us to undertake these complex, demanding operations at less risk to our soldiers. We owe them nothing less than the provision of the most capable systems with the maximum, realistic protection achievable. ∞

ENDNOTES:

1. Major General Patton quoted in *Human Factors in Mechanised Warfare*, pp. xiii-xiv.
2. Major General Patton quoted in *Human Factors in Mechanised Warfare*, p. xiii.
3. The other BOS are Manoeuvre, Fire Support, Information Operations, Reconnaissance / Surveillance / Intelligence, Air Defence, Command and Control and Combat Service Support.
4. *LWD 1*, annex F-3.
5. The term, 'fighting power', is more fully developed in chapter 5 of *LWD 1*.
6. Within 1 CER there is a Combat Engineer Support Troop in the Mechanised Field Squadron and a Plant Troop in the Operations Support Squadron (OSS). Mechanised Field Troops have mine detectors and prodders.
7. *LWD 1* spells out the 10 Army capability outputs. One of these is a 'Capability for Mechanised Operations'.
8. For a description of these operations, see *LWD 1*, annex B.
9. *Formation Tactics*, Chapter 5, 'Other types of Offensive Operations'.
10. SOSR : Suppress, Obscure, Secure, Reduce.
11. Reduction of the obstacle refers to the creation of lanes through the obstacle through which an assault force may traffic onto an objective.
12. In his paper entitled *A View of Future Minewarfare*, Lieutenant Colonel T.J. Wakefield, Royal Engineers, describes first generation mines as the first crude metal encased mines and second generation as today's more sophisticated electronically operated mines.

13. We must assume here that not all adversaries are noble and have signed the Inhumane Weapons Convention and/or the Ottawa Convention. These conventions ban the use, production, stockpiling and transfer of anti-personnel landmines.
14. 'The US Department of Defence Self-Healing Minefield (SHM) Project', *Jane's Defence Weekly*, Vol 32, July 1999, Issue No. 2, p. 7.
15. This includes *MLW 1.1.4 Formation Tactics*. Chapter 5 provides a description of each.
16. An obstacle group composed of more than one type of obstacle, ie, mines, wire and anti-tank ditching.
17. The French Leclerc ARV with K2D mine clearing kit mounts the latest DEMETER electronic signature duplicator from GIAT industries to detonate mines ahead of the vehicle.
18. The French Leclerc Armoured Recovery Vehicle is modified with the addition of a British Pearson Engineering Full-width Mineplough. It also mounts the electronic signature duplicator previously mentioned, a Pearson Engineering Pathfinder dual minefield marking system and twin Polish Pronit rocket propelled mineclearing explosive charges. *Jane's Armour and Artillery*, 1998-1999.
19. *Formation Tactics*, chapter 5, paragraph 5.15.
20. Giant Viper and MICLIC (Mine Clearance Line Charge) are two examples of this capability. These devices are also employed breaching wire and clearing infantry from trenches (used by the US Marine Corps in the Gulf War)

BIOGRAPHY

Major Ryan graduated into RAE from RMC in 1989 and has served in a variety of engineer appointments, most recently as an instructor at the School of Military Engineering and as aide-de-camp to Commander Land Command. He holds a Bachelor of Professional Studies majoring in Asian Studies. In January 2000 he will take up the appointment of Squadron Commander, ICER.



DECISIVE EVENT PLANNING

Incorporating Manoeuvre Theory into the Military Appreciation Process

BY MAJOR P. CHIPMAN AND MAJOR B. BAILEY

Fighting smart involves a commitment to manoeuvre rather than attrition ...

The Australian Army ... does not subscribe to the tactical theory of attrition ...

Land Warfare Doctrine 1¹

INTRODUCTION

The Fundamentals of Land Warfare describes the Australian Army's commitment to 'fighting smart' through the use of a manoeuvrist rather than attritionalist approach. While some may argue that such an approach is nothing new, the articulation of this commitment in the Army's keystone doctrine is something which has not been done before. Clearly, both in practice and doctrine, the Australian Army now seeks to employ manoeuvre theory at all levels in the plans that it produces.

The decision-making tool used to develop these plans is the recently introduced Military Appreciation Process (MAP) which incorporates Intelligence Preparation of the Battlefield (IPB). In IPB, an enemy's centre of gravity (COG) and critical vulnerabilities that can undermine it are determined. The focusing of the plan on these vulnerabilities is a key requirement if it is to espouse manoeuvre warfare. It is the authors' observation that this link between critical vulnerabilities and the plan is not well achieved in many of the plans produced by students of tactics.²

The Australian Army has embraced manoeuvre theory as a warfighting philosophy and incorporated the MAP into its doctrine, but appears not to have established a linkage between the two. On the one hand is a theory that seeks to gain the maximum effect from the intelligent application of the art of war. On the other hand is a decision-making process that attempts to streamline military planning using a scientific framework. Whilst any marriage between art and science is bound to be problematic, it is nonetheless essential, given the Australian Army's stated dedication to both manoeuvre (the art) and the MAP (the science). It is proposed that a methodology that focuses planning on decisive events can help achieve this link and assist incorporating manoeuvre warfare across the full spectrum of operations.

The aim of this essay is to propose a means of linking manoeuvre theory to the MAP through the concept of Decisive Event Planning. The essay will explain Decisive Event Planning in terms of its foundations, IPB and Mission Analysis, before describing its application to develop courses of action and manoeuvrist plans.

THE FOUNDATIONS OF DECISIVE EVENT PLANNING BATTLESPACE ANALYSIS

Fundamental to the development of any plan is a thorough understanding of the battlespace. The MAP seeks to create this understanding through the IPB steps 'define the battlespace environment' and 'describe the battlespace effects'. Decisive Event Planning requires this detailed assessment of the battlespace to allow the conduct of threat and mission analysis. The detailed analysis of terrain, weather and other effects merged into a Modified Combined Obstacle Overlay (MCOO) provides the foundation from which to commence the Decisive Event Planning process.

THREAT ANALYSIS: THE CENTRE OF GRAVITY CONSTRUCT

*'the hub of all power and movement on which everything depends. That is the point against which all our energies should be directed.'*³

The re-emphasis on operational art in the armies of ABCA has created a renewed interest in the military theories of Clausewitz and, in particular, his concept of COG as described above. This concept is central to the application of manoeuvre theory to any military problem. The Australian Army defines COG as:

*'That characteristic, capability or locality from which a military force, nation or alliance derives its freedom of action, strength or will to fight.'*⁴

Australia and the other ABCA partners view the COG as a strength, which is reflected in their individual definitions, and is a view that will be reinforced throughout this paper. However, if the aim of manoeuvre theory is to avoid strength and attack weakness, how do we target the COG if it is indeed a strength? The solution lies in the identification of critical vulnerabilities.

Critical vulnerabilities are those elements of a force that if destroyed, captured or neutralised will significantly undermine the fighting capacity of the force and its COG.⁵ Until recently, there was no formal mechanism for deriving critical vulnerabilities from the COG. Command Staff and Operations Wing has developed such a mechanism based on the work of Dr Joe Strange from the Marine Corps University.⁶ Called the COG Construct, it provides a methodology for analysing the COG to determine critical vulnerabilities by using two new concepts proposed by Dr Strange: critical capabilities and critical requirements. Critical capabilities are inherent capabilities enabling a COG to function as such. Critical requirements are the essential conditions, resources and means for a critical capability to be fully operative.

The first requirement of the construct is to identify the enemy COG. Although this can be difficult, a thorough analysis of the enemy at the relevant level of war will indicate that there are certain characteristics or entities from which the enemy draws physical strength, will to fight or freedom of action. The key to identifying which of these becomes the COG is to relate the enemy's characteristics and objectives to the constraints imposed by the battlespace.

Once the COG has been determined, those capabilities upon which the COG is based need to be identified – these are the critical capabilities. This requires an analysis of the COG to determine what gives it its strength. If the enemy's COG was the ability to generate superior combat power at a decisive point, then the critical capabilities that comprise that COG could include armour, mechanised infantry and fire support. As any

military force is comprised of many capabilities the term critical is applied to those that directly support the COG.

Having identified the critical capabilities upon which the COG is based, the requirements for those capabilities to be fully operative are identified. These are the critical requirements. The term critical is again applied to demonstrate the linkage to the COG. Each critical capability is analysed individually in order to identify those aspects of the capability that enable it to function as a system or entity. Arguably, command and control, combat service support and doctrine are requirements common to all capabilities.

Once the critical requirements have been identified, they are analysed to determine whether they have any inherent vulnerabilities – these are the critical vulnerabilities. All of the possible critical vulnerabilities should be listed from which it will become apparent that some relate to more than one critical requirement. These may receive a priority of attention later in the MAP. An example of the application of the COG Construct is shown in the top portion of figure 1.

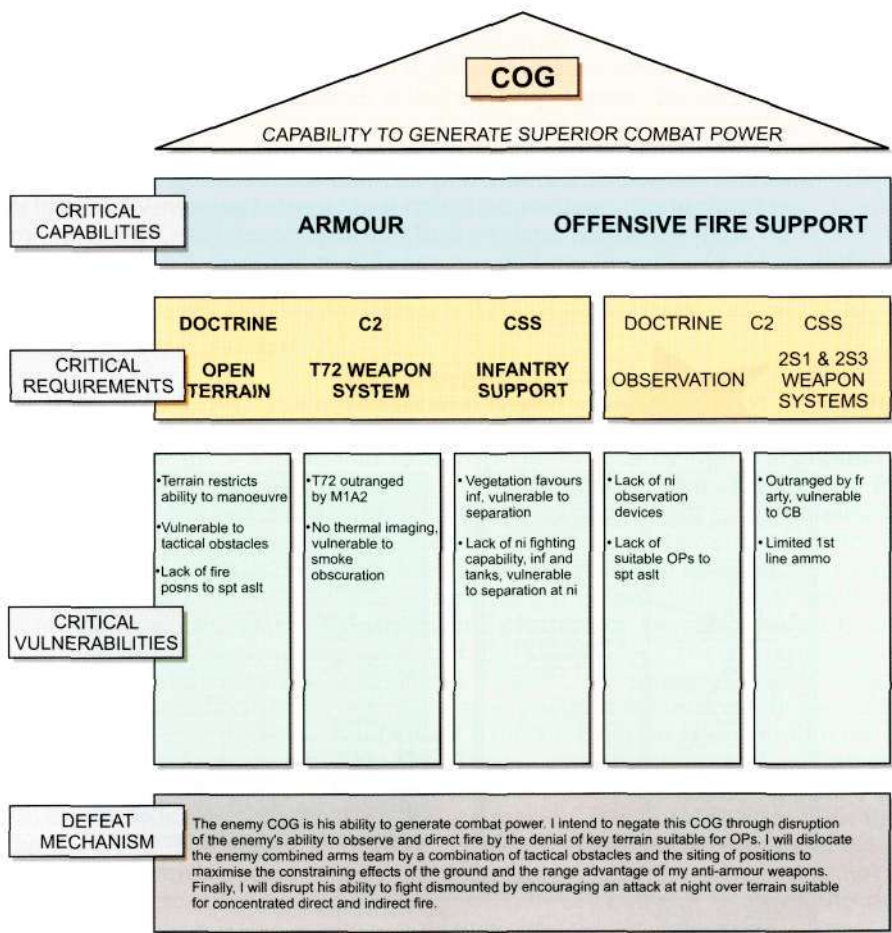


Figure 1. Centre of Gravity Construct and Defeat Mechanism

MISSION ANALYSIS

Mission analysis provides the third key input to the Decisive Event Planning process and promotes the application of manoeuvre theory through directive control. As such, it joins battlespace and threat analysis as a fundamental step to Decisive Event Planning. Reviewing the situation and conducting own troop analysis provides the planner with the background necessary, from a friendly force perspective, to visualise potential friendly courses of action (COAs). This includes an understanding of the friendly capabilities and COG. The friendly picture is completed by a detailed consideration of the commander's intent to identify the mission, specified and implied tasks, freedoms of action and constraints. The list of specified and implied tasks should be consolidated into a list of essential tasks summarising those tasks that must be completed successfully to achieve the mission and the superior commander's intent. Minor tasks, even if specified, should be omitted from this list to aid in clarity of thinking later in the MAP. After this is completed, COAs can be visualised and specifically focused to achieve the key aspects of the commander's intent within the guidelines that have been set.

With this information, plans can be produced that meet the superior commander's intent. For the plan to be achievable, a thorough understanding of the battlespace is required to maximise the advantages and minimise the restrictions that it affords. For the plan to be effective, it must incorporate both doctrinal principles and manoeuvre theory. This requires at least an equal consideration to the threat as given to mission and battlespace analysis. As will be explained in the next section, decisive events focus all this information to allow conversion into a plan that targets the enemy's critical vulnerabilities. Mission analysis, threat analysis and battlespace analysis, therefore, provide the foundations for Decisive Event Planning as shown in figure 2.

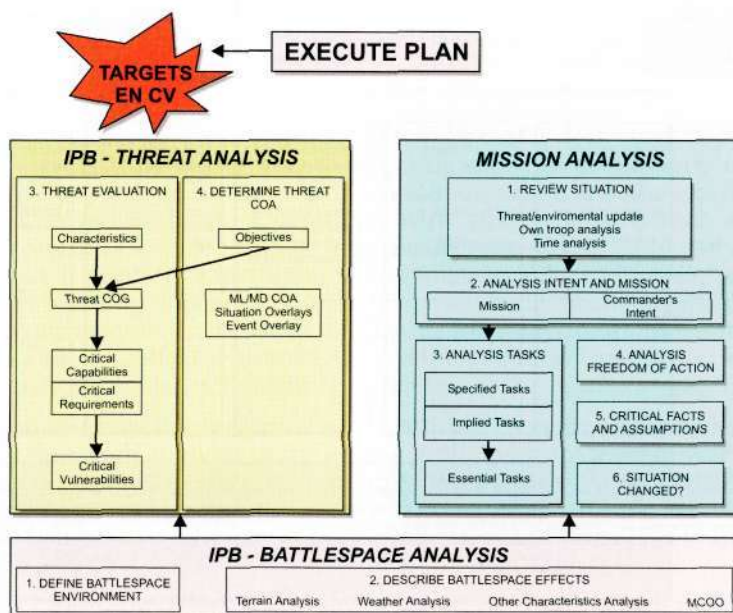


Figure 2. Battlespace, Threat and Mission Analysis

APPLYING DECISIVE EVENT PLANNING

... the name decisive strategic point should be given to all those which are capable of exercising a marked influence either upon the result of the campaign or of a single enterprise.

*Jomini*⁷

DECISIVE EVENTS: SIGNIFICANT INFLUENCES ON RESULT

Jomini identified that there will be certain events in the conduct of warfare that can have a significant influence on the result of particular battles or campaigns. These events have become known as decisive points and are described as 'the keys to unlocking the enemy centre of gravity'⁸. The ADF defines decisive points as:

*... those events, the successful outcome of which is a precondition to the elimination of the enemy's centre of gravity.*⁹

This link with undermining the COG has resulted in the current line of thinking espoused by Dr Strange that bases decisive points on critical vulnerabilities.¹⁰ *The Fundamentals of Land Warfare* also emphasises this link to critical vulnerabilities:

*By successfully attacking or neutralising an enemy's critical vulnerabilities, decisive points are created which are a precondition to the successful disruption or negation of the enemy's centre of gravity.*¹¹

Despite these definitions, it is argued that a decisive point can best be explained in terms of Jomini's original interpretation, that is, an event that is capable of significantly impacting on the result of a particular battle, operation or campaign. Put another way, a decisive point is an event which, if not successful, may result in failure of a force to achieve its assigned mission. The link with the enemy COG still exists because undermining the COG will contribute to the enemy's failure, and, therefore, enhance the potential of success. This interpretation does, however, pose the question, 'Is there more to decisive points than the enemy's COG and critical vulnerabilities?' It can be argued that there may be events that could significantly impact on success which are not obvious as a precondition for the undermining of the enemy COG. These events may still be required for the achievement of a specified mission. An example might be the withdrawal following a delaying defence into a new position to concentrate force for a defensive battle. The withdrawal is not in itself a precondition to undermining the enemy COG at the level of the force withdrawing. The superior commander has, however, ordered it. Is it a decisive point? Yes it is, because if not conducted successfully, it could result in failure to achieve the mission of the superior. It is potentially a defining point in the battle. It could be argued that it also contributes to the undermining of the enemy COG at the level being considered by the superior commander which may not be immediately evident to a planner from his/her own threat analysis. In effect, this decisive point has come from mission analysis not from critical vulnerabilities.

This potential for decisive points to emanate from mission analysis is a new concept that requires the definition of decisive points to be reconsidered to include reference to superior commander's intent. To avoid confusion with the term decision point¹² and to more accurately reflect its description of events rather than geographic points, it is proposed that the term decisive event be applied to the expanded definition. It is proposed that the definition be:

- * Decisive events are those events for which successful outcomes are preconditions to the negation of the enemy's centre of gravity and the achievement of the superior commander's intent.

By considering decisive events in this way, they are able to provide a focus for the information determined in both threat and mission analysis and, therefore, a basis from which the remainder of the MAP can be prosecuted to produce manoeuvrist plans.

DEFEAT MECHANISM

The defeat mechanism describes the method to be employed to defeat the enemy in terms of the effects created. The following definition is offered:

- * The defeat mechanism is a statement that describes how a commander plans to defeat the enemy. It includes the commander's assessment of the enemy centre of gravity and how it will be negated through targeting critical vulnerabilities at decisive events. It is explained in terms of effects on the enemy.

A defeat mechanism flows directly from the consideration of the enemy's critical vulnerabilities. It should commence with a description of the enemy centre of gravity and then describe the critical vulnerabilities that will be targeted in terms of the effects desired. These effects should be described predominantly in terms of the manoeuvre warfare shaping effects: disruption, dislocation and pre-emption.¹³ By virtue of the methodology used to derive it, the defeat mechanism will describe these effects in terms of the particular decisive events that originated from threat analysis. An example of a defeat mechanism and the COG Construct from which it was derived is in figure 1.

A METHODOLOGY FOR DETERMINING DECISIVE EVENTS AND A DEFEAT MECHANISM

The first step in determining decisive events and the defeat mechanism is to combine the critical vulnerabilities derived in threat analysis with the assessment of own troops conducted in mission analysis. The result will be a list of targetable critical vulnerabilities. These are critical vulnerabilities that can be actually influenced with the force available to the planner. This is an important step as these critical vulnerabilities are those that the final plan will actually target. Decisions to target a particular vulnerability or not must be based on a thorough understanding of own force capabilities.

The planner now uses the two pieces of information which represent the consolidation of the MAP at this point. The first is the list of enemy targetable critical vulnerabilities derived by combining threat and own troop analysis. The second is the list of essential tasks derived during mission analysis. With this information firmly in mind, the planner must visualise the battlespace to determine what decisive events exist. The recommended way to do this is to consider the battle chronologically¹⁴ and ask the question:

- * What events must I successfully achieve to target the enemy's critical vulnerabilities and achieve my superior commander's intent?

This consideration should result in the identification of a number of events that are critical to the success of the operation. These are the decisive events. They are determined by considering the operation holistically with the knowledge provided from threat, terrain and mission analysis. The events selected must be significant enough to cause the potential of failure if not successfully achieved. More than one vulnerability or essential task may often be included in a single decisive event.

To determine a defeat mechanism a planner should ask the question:

- * What effects must I impose on the enemy to target their critical vulnerabilities?

These effects will normally commence with a task verb incorporating a manoeuvre warfare shaping effect but can use other task verbs (such as destroy) if these best describe the desired effect. It is generally at the decisive events that these effects are going to be created using the resources available to the force. Once written, the defeat mechanism becomes the method paragraph of the commander's intent statement. This paragraph describes the commander's intent in terms of the effect that is desired on the enemy.¹⁵ An example of the methodology to determine decisive events and the defeat mechanism is in figure 3.

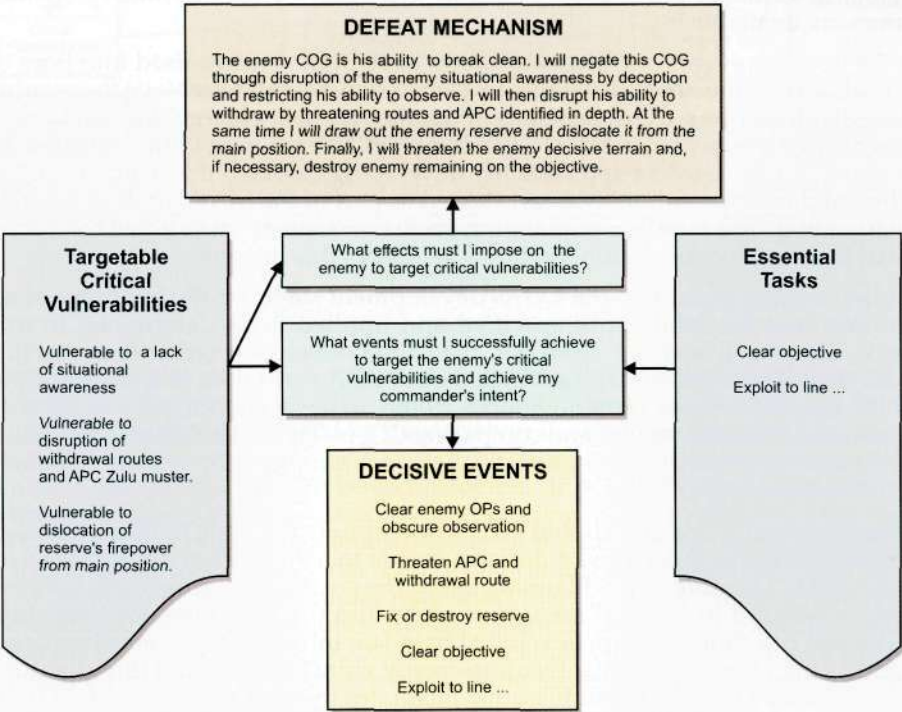


Figure 3. Determining Decisive Events and Defeat Mechanism

The decisive events define the events that are 'decisive' or 'critical' to the operation. These are extremely useful because they allow the focusing of planning effort in all future parts of the MAP. The defeat mechanism, on the other hand, describes the effects that are to be achieved on the enemy through these decisive events, in order to target the enemy's critical vulnerabilities. As will be explained in the next section, the various options to achieve these effects at the events identified as decisive constitute the various COAs available to achieve the mission.

It should be obvious how important the identification of decisive events and a defeat mechanism are to the production of a successful plan. For this reason, in the deliberate MAP, it will be normal to determine them by gathering the majority of planning staff to consolidate IPB and mission analysis. At the end of this stage of planning, staff should be in a position to visualise action, conceptualise approaches and apply doctrine to produce a number of COAs.

APPLYING DECISIVE EVENTS

Decisive events and the defeat mechanism provide valuable tools to develop COAs by providing information on what events have to occur and what effect is required on the enemy in conducting them. From this information, various COAs can be developed that are simply options available to achieve these events and effects. Different COAs may target different vulnerabilities at different decisive events or achieve the required effects in different ways. A series of decisive events when combined and synchronised into a logical sequence is a line of operation. There may be various lines of operation if resources are available.¹⁶

Once the decisive events and shaping effects have been synchronised into lines of operation, allocating the necessary forces to each decisive event to achieve the required effect broadly develops a COA. Schemes of manoeuvre will emerge that are focused on the defeat of the enemy by indirectly attacking his COG through vulnerabilities at decisive events—a manoeuvrist approach. By developing COAs in this way, each COA has been linked directly to the analysis conducted as part of the MAP and is not developed in isolation of it. The focusing of planning on decisive events developed by combining essential tasks with critical vulnerabilities facilitates this linkage.

Of course, another input into the COAs development stage are the freedoms of action, constraints, and the total list of specified and implied tasks determined in mission analysis. These will serve to 'flesh out' the COAs developed rather than provide the basis for their development. These 'fleshed out', COAs are taken to war gaming where again the decisive events provide a focus to the analysis conducted. Decisive events also provide a means of testing and comparing COAs. Those that achieve particular decisive events better may receive greater weighting from the staff in their recommendations to the commander.

The plan eventually selected should be the best option available to target the enemy's vulnerabilities through a series of decisive events to achieve the commander's intent. The strength of Decisive Event Planning lies in the creation of a direct link between the analysis conducted in IPB and mission analysis and the final plan. Without this link, there is a real risk that plans are developed based on intuition, the ground and doctrine only, rather than based on a clear focus on enemy vulnerabilities and the superior commander's intent. Decisive Event Planning facilitates this linkage as shown in figure 4.

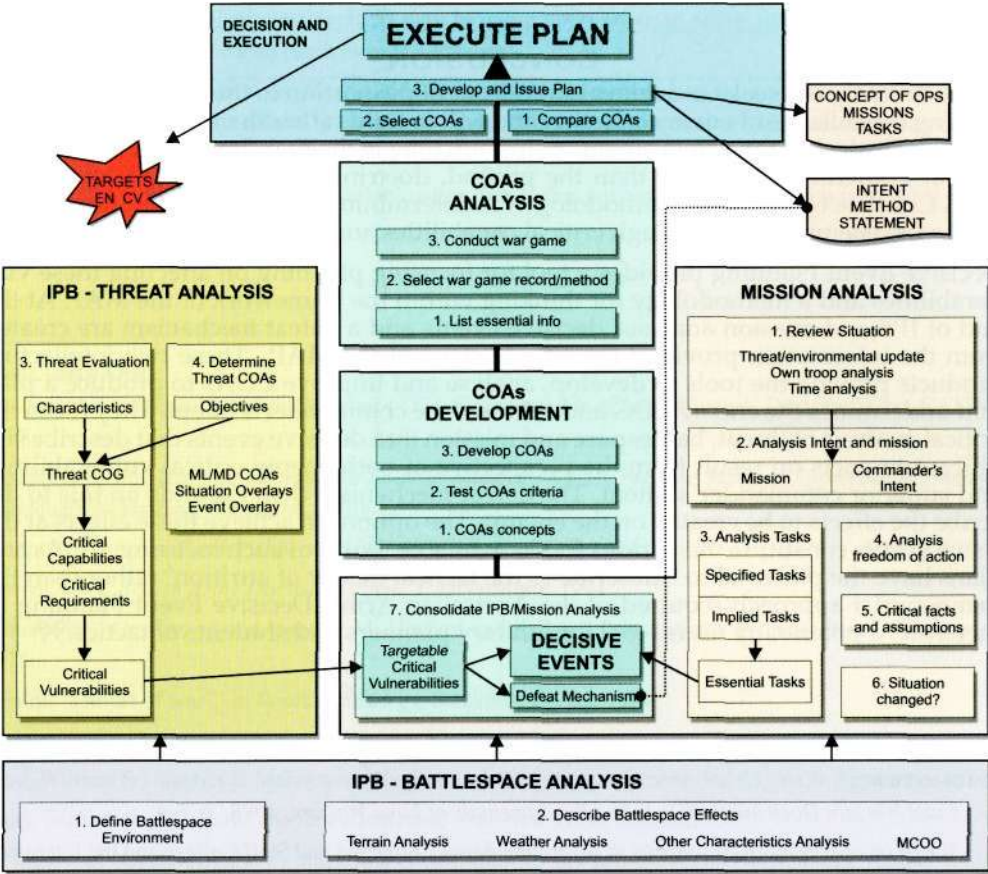


Figure 4. Decisive Event Planning

Decisive events also provide a means of increasing the speed of short-term planning such as the combat or quick MAP. As the situation develops, changes can be considered against the criteria provided by the decisive events. If the situation has changed so much that the events required for success (the decisive events) are no longer relevant, the current plan would need to be reconsidered. If not, it should be capable of withstanding the changes in the situation. When planning time is so short that the emphasis turns to experience rather than detailed analysis, decisive events again provide a planning focus. In this case, the process used to determine the decisive events can be shortened to the extent that a commander may select them purely from personal experience of the enemy critical vulnerabilities and the essential tasks. Regardless, the focus they provide for the development of COAs makes them useful. The focusing of intellectual effort on the key inputs to decisive events, being targetable critical vulnerabilities and essential tasks, also can significantly increase the speed of the MAP.

CONCLUSION

Manoeuvre theory seeks to achieve success out of proportion to the effort expended by seeking the collapse of enemy cohesion and will to fight rather than the enemy's means to fight. Critical in the achievement of this outcome is the focusing of plans on enemy critical vulnerabilities rather than the ground, doctrine or own force structure. The COG Construct provides a methodology for determining these vulnerabilities by analysing the enemy's COG through critical capabilities and requirements.

Decisive Event Planning provides a tool for focusing planning on affecting these vulnerabilities and a methodology for thinking within the framework of the MAP. At the end of IPB and mission analysis, decisive events and a defeat mechanism are created from the information provided from these steps of the MAP. These two intellectual products provide the tools to develop, analyse and improve COAs to produce a plan that undermines the enemy COG and achieves the commander's intent. They focus the critical analysis of threat, battlespace and mission into decisive events that describe significant impacts on result from the perspective of both enemy critical vulnerabilities and superior commander's intent. The defeat mechanism then expands on this to describe the effects to be created on the enemy. The options to achieve these effects at decisive events constitute the various COAs available. Without such focusing, COAs and plans have the potential to 'subscribe to the tactical theory of attrition' rather than the manoeuvrist approach required of the Australian Army. Decisive Event Planning is, therefore, a potentially useful tool for military planners and students of tactics. ✕

ENDNOTES

1. *Land Warfare Doctrine (LWD) 1, The Fundamentals of Land Warfare*, 1998, p. 6-4.
2. Based on observations of students at Australian Army Command and Staff College and the Intermediate Operations Course over the period 1997-1999.
3. Clausewitz, *On War*, ed and trans by M. Howard and P. Paret, Princetown, 1976 pp. 595-596.
4. *LWD 1*, 1998, p. 6-4. See also *ADFP 101, Glossary*, 1994, AL1, p. C-3.
5. *Ibid*, p. 6-4.
6. Strange, J, 'Centers of gravity and critical vulnerabilities' in *Perspectives on Warfighting*, Number 4, Marine Corps University, 1996.
7. Jomini, 'The art of war', in *Roots of Strategy*, Stackpole Books, 1987, p. 467.
8. *British Army Doctrine Volume 1, Operations*, 1994, p. 3-13.
9. *ADFP 101, Glossary*, 1994, AL1, p. D-2.
10. Strange, J, *Op Cit*.
11. *LWD 1*, *Op Cit.*, p. 6-4.
12. Significant confusion currently exists for those unfamiliar with the MAP over the use of the terms decision point and decisive point because of their similar nomenclature.
13. These are the manoeuvre warfare shaping effects taught by Command Staff and Operations Wing, Australian Army Promotion Training Centre, and espoused by Leonard. Leonard R.R., *The Art of Maneuver*, Presidio, Novato, 1991.

14. Reverse chronological consideration may be more appropriate in some situations where reverse planning is recommended (such as in the advance).
15. Note the difference between the method statement which describes how the commander will defeat the enemy in terms of the effects to be created, and the scheme of manoeuvre which describes how these effects are to be achieved utilising the forces available.
16. At the tactical level, resources available often dictate that only one line of operation is possible at any given time.

BIBLIOGRAPHY

- Australian Army, *Land Warfare Doctrine 1, The Fundamentals of Land Warfare*, Doctrine Wing, CATDC, 1998.
- Australian Army, *Training Information Bulletin Number 74 (TIB 74), The Military Appreciation Process*, Headquarters Training Command, 1996.
- Australian Defence Force Publication, (ADFP) 101, *Glossary*, 1994, AL1.
- British Army, *British Army Doctrine Volume 1, Operations*, 1994.
- Clausewitz, *On War*, ed and trans by M. Howard and P. Paret, Princetown University Press, Princetown, 1976.
- Jomini, 'The art of war', in *Roots of Strategy*, Stackpole Books, 1987.
- Leonard R.R., *The Art of Maneuver*, Presidio, Novato, 1991.
- Lind, William S., 'Tactics in Manoeuvre Warfare' in *Marine Corps Gazette*, Vol 65, No. 9, September 1981.
- Lind, William S., *Maneuver Warfare Handbook*, Westview Press, Boulder, 1985.
- Strange, Joe, 'Centers of gravity and critical vulnerabilities' in *Perspectives on Warfighting*, Number 4, Marine Corps University, 1996.

GLOSSARY

Centre of Gravity. That characteristic, capability or locality from which a force derives its freedom of action, strength or will to fight.

Critical Capabilities. Inherent capabilities enabling a centre of gravity to function as such.

Critical Requirements. Essential conditions, resources and means for a critical capability to be fully operative.

Critical Vulnerability. A characteristic or key element of a force that if destroyed, captured or neutralised will significantly undermine the fighting capability of the force and its centre of gravity.

Decisive Events. Those events for which successful outcomes are preconditions to the negation of the enemy centre of gravity and the achievement of the superior commander's intent.

Defeat Mechanism. A statement that describes how a commander plans to defeat the enemy. It includes the commander's assessment of the enemy centre of gravity and how it will be negated through targeting critical vulnerabilities at decisive events. It is explained in terms of effects on the enemy.

Essential Tasks. Those tasks which must be completed to allow achievement of the mission or the superior commander's intent.

Specified Tasks. Tasks that have been specifically directed by a superior commander.

Implied Tasks. Tasks that have not been specifically directed but are considered to be required to achieve an allocated mission, another task, or the superior commander's intent.

Line of Operation. A description of how military force is applied in time and space through decisive events to undermine the enemy's centre of gravity.

BIOGRAPHY

Major Brian Bailey, Royal Australian Artillery, is the Senior Instructor of the Intermediate Operations Course conducted by Command Staff and Operations Wing at the Australian Army Promotion Training Centre, Canungra. He attended the Australian Army Command and Staff College in 1997. Prior to attending Command and Staff College, Major Bailey held a variety of regimental and staff appointments culminating in command of the 101st Field Battery, 1st Field Regiment in 1996. He graduated from the Royal Military College in 1985. He has a Bachelor of Arts, Bachelor of Economics and a Master of Defence Studies. He is currently completing a Master of Business Administration at the University of Southern Queensland.

Major Phil Chipman, Royal Australian Engineers, is an instructor on the Intermediate Operations Course conducted by Command Staff and Operations Wing at the Australian Army Promotion Training Centre, Canungra. He attended Australian Army Command and Staff College in 1998. Before attending Command and Staff College, Major Chipman served in the 3rd Combat Engineer Regiment as both the Operations Officer and Officer Commanding the 18th Field Squadron. Prior to this, he served with the United Nations Truce Supervision Organisation in the Middle East. He graduated from the Royal Military College in 1985. Major Chipman has a Bachelor of Engineering and a Master of Defence Studies. He is currently completing a Master of Management Studies at the Australian Defence Force Academy.



BY DOCTOR M. EVANS

Trying to draw military lessons from any contemporary conflict is always difficult, especially a conflict so recent as Kosovo. One must be careful not to generalise about modes of strategy and types of weapons technologies that may not necessarily apply to other crises and contingencies. It is also by no means clear that the military challenges of Kosovo have ended. Before discussing what military lessons might have emerged from Kosovo, it is necessary to say something about the character of the war fought between the Atlantic Alliance and Yugoslavia.

Operation ALLIED FORCE, the air campaign waged by the North Atlantic Treaty Organisation (NATO) against Yugoslavia over Kosovo, represents a new phenomenon in international politics: a war fought for primarily humanitarian purposes. The conflict is a major step by the Western democracies towards making respect for human rights the bedrock of international security in the 21st Century. In the words of NATO Secretary-General, Javier Solana, the Western Alliance intervened in Kosovo to 'avert a humanitarian catastrophe'. President Bill Clinton of the United States said in mid-April:

We [the United States] and our 18 NATO allies are in Kosovo today because we want to stop the slaughter and the ethnic cleansing . . . we cannot simply watch as thousands of people are brutalised, murdered, raped, forced from their homes, their family histories erased—all in the name of ethnic pride and purity.

The aim of the American-led Western alliance was to secure the Kosovar Albanians through means of a swift air war against the Yugoslav Serbs. NATO Commander, General Wesley Clark, stated that air power was being applied to 'systematically degrade and progressively attack, disrupt, devastate and ultimately destroy [the Serbian forces in Kosovo] and their facilities and support'. Many Western planners believed that air power would force the regime of Slobodan Milosevic to agree to the February 1999 Rambouillet Accords permitting Kosovo autonomy, an independence referendum and a NATO peacekeeping force. In short, Operation ALLIED FORCE was a war to achieve a humanitarian purpose first and foremost, and this is the criterion against which the military lessons of the Kosovo conflict must be drawn.

Based on available information, there are five major lessons that can be identified from Kosovo (although more will almost certainly emerge in the future). The first lesson to be drawn concerns the need to match ends and means in formulating strategy. In Kosovo, NATO's choice of military means—air power—did not match the strategic end sought—the safety of the Albanian Kosovars. The air war did not succeed in securing the Kosovo population; indeed, it worsened and accelerated the humanitarian crisis because the Serbs systematically depopulated the province of Albanians. What NATO heralded as a fast air war became a campaign of attrition against Yugoslavia. The real-

ity was that the Serbs were able to depopulate Kosovo more quickly than air power could degrade the Serbian forces in the field or destroy the Yugoslav warfighting infrastructure.

Kosovo was subjected to mass terror reminiscent of German SS field units in Eastern Europe during the Second World War. In short, in trying to prevent genocide, the West used a military method – air power – that accelerated it. In an extraordinary paradox, a war based on the notion of discriminate force using dazzling Information Age high technology – B2 bombers, cruise missiles and joint direct attack munitions (JDAMS) – sacrificed the Albanian Kosovars to indiscriminate death at the hands of Serb forces using methods we associate with the Dark Ages.

NATO had no contingency plan to deal with ethnic cleansing – the very reason for the war. It is now clear that NATO's strategic bombing did not cripple the 36 000-strong Yugoslav Army (VJ) and paramilitary police (MUP) in Kosovo. Although NATO air strikes inflicted considerable damage on the fixed installations of the Yugoslav Army, Serb forces maintained their cohesion and effectiveness by falling back on a well-rehearsed Titoist strategy of defence-in-depth based on interior lines of communication and techniques of mobility, dispersal and concealment.

Boats were used for resupply; Kosovar buildings became Serb command centres; and Kosovar fuel resources were used by Serbian troops. At the end of April, NATO intelligence sources estimated that Serbian forces were operating against ethnic Albanians in over 200 locations across Kosovo. This dispersal of Serbian forces was impossible to control from the air without risking the deaths of many Albanian civilians. The inability of Western precision air munitions to locate and destroy a passive, well-dispersed and concealed Serbian ground force was the major weakness of NATO's air campaign. As General Wesley Clark admitted, NATO's bombing in Kosovo could not affect light infantry operations in Kosovo except in the context of a very long-term campaign.

During the air and missile campaign, NATO claimed to have destroyed up to half of the VJ's artillery and a third of its armour in Kosovo. We now know that much of this bomb damage assessment was made up of Serbian dummy targets. Some reports now suggest that only thirteen of Yugoslavia's 300 battle tanks in Kosovo were destroyed by NATO air strikes. When the Serbian Third Army, the backbone of the Serbian presence, withdrew from the province during June, Western observers counted 250 tanks, 450 armoured personnel carriers and 600 artillery pieces.

The result of NATO's inability to neutralise the Serb forces on the ground in Kosovo was disastrous for the Albanian Kosovars. Before the air war, there were 45 000 refugees outside Kosovo; when the air war ended, there were 855 000. Even if eighty per cent return, there will still be 160 000 refugees – quadruple the number before hostilities began. Aerial firepower did not, and could not, stop scorched-earth tactics. In humanitarian terms, the air war in Kosovo was an unmitigated disaster.

The second military lesson is that the war in Kosovo illustrates how to lose the strategic initiative in war. The operations of the Serbian land forces in Kosovo should have been the key strategic focus of the conflict. Yet NATO lost its capacity to dictate the flow of events inside Kosovo from the moment Western leaders ruled out the use of ground forces in the Balkans. This is not to suggest that a ground offensive would have been easy. There can be little doubt that the obstacles to major land operations – both against Serbia and into Kosovo – were immense for a complex range of political, diplomatic, geographical and logistical reasons. However, there is a major difference between *noting* the operational difficulties of ground warfare in the Balkans and *ruling out* the use of land forces as an instrument of policy – as was done over Kosovo by Western political leaders.

The decision to rule out the use of land forces in the Balkans as declared by Western policy was a strategic error of the first order. Such a declaration gave the Milosevic regime freedom of action in Kosovo and it robbed NATO planners of a series of options to exploit ground force deployment below the threshold of an invasion of Kosovo. By refusing to deploy troops, NATO forfeited the chance of developing a limited enclave strategy to create safe havens for the Albanian Kosovars—as was done in 1991 for the Iraqi Kurds. A Kosovo protection force could have been created from the various European rapid reaction forces—perhaps led by the 2 200 Marines in the Adriatic and the US Southern European Task Force battalion group at Vincenzo in Italy.

The risks to NATO protection forces from a long logistic tail and a lack of heavy armour in the face of superior Serb forces in Kosovo would have been considerable. But the US Army's Task Force Hawk in the Balkans consisting of Apache helicopters and multiple launch rocket systems could have offset these risks. Apaches could have been deployed along with A-10 Warthogs and F-16 and Harrier strike jets to provide air cover for a NATO protection force. Such moves might have won Russian support and isolated the Milosevic regime much earlier in the conflict and, above all, saved Albanian Kosovar lives.



Apart from the lack of an enclave strategy, NATO denied itself the option of using land forces as a means of forcing the Yugoslav Army in Kosovo to concentrate. An assembled NATO ground force would have compelled the Serbs to concentrate their heavier units as a counter-invasion force thus reducing their effectiveness and making them more vulnerable to NATO air attack. In Kosovo, NATO showed that it had failed to learn the principal lesson of its air operations in Bosnia during 1995. In Bosnia, the NATO air strikes that helped to bring about the Dayton Agreement were facilitated largely by Croatian Army ground operations against Serb forces. Croatian military activity gave NATO pilots the opportunity to attack concentrated Serb formations.

It is significant that the Serb Army in Kosovo appears to have escaped serious damage until late May, when KLA guerillas were able to flush out hidden Serbian formations into the open where their armour could be targeted and checked by American air power. Between late May and the end of the war in early June, the Kosovar Liberation Army (KLA) fielded up to 10 000 guerillas in Kosovo. There was a growing synergy between KLA operations on the ground (that forced Serb tactical concentration) and NATO's increased ability to degrade the VJ from the air. For example, on June 7 when a Serbian battalion-sized force concentrated against the KLA near Mount Pastrok, American B52s destroyed the formation by dropping cluster bombs and inflicting 200 casualties.

As General Henry Shelton, the Chairman of the US Joint Chiefs of Staff has noted, it was ground activity that finally exposed Serb forces to A-10, B1 and B 52 bombardment. If limited numbers of highly trained regular Western troops had been committed earlier to perform the task of the KLA, it is safe to assume that many Albanian Kosovar lives would have been saved and the Yugoslav armed forces exposed to aerial firepower much earlier in the war. The lesson is clear: while air power can force ground troops to scatter, it cannot prevent dispersed, low-intensity operations. The KLA example reinforces the lesson from Bosnia in 1995: it still takes ground troops to force enemy land forces to concentrate. The West's mantra of 'no ground troops' negated any Serb need to concentrate its forces in Kosovo. Instead the VJ-MUP were free to move and to massacre Albanian Kosovars.

The third military lesson of the Kosovo war relates to what military experts now term asymmetric warfare. Asymmetric warfare is unconventional warfare that seeks to drive the military dimension into the civil dimension to offset Western superiority in high technology. The tools of asymmetric warfare include protracted guerilla war, urban terrorist action and the use of irregular militia forces. These are military tools that are difficult to find and to defeat quickly. In many of its essential features, Kosovo was the prototype of such an asymmetric war. Serbian forces employed dispersed low-intensity tactics, used the Albanian Kosovars as human shields and succeeded in 'swimming in a sea of civilians'.

The term symmetric warfare may be new but the concept is well known. For instance, in the nineteenth century Western military establishments fought far more of Kipling's 'savage wars of peace' than large-scale conventional wars. It is likely that in the twenty-first century, Western militaries will be confronted by asymmetric 'savage wars of humanity' — conflicts in which forces are committed for humanitarian reasons. Such savage wars of humanity may have to be conducted in the glare of the media, with complex rules of engagements, amidst refugees and civilians and be waged against unpredictable opponents.

To prepare for such a role, the study of colonial warfare and low-intensity conflict are likely to increase in Western militaries in the early years of the next century. Western armies, in particular, need to accelerate the development of rapid deployment and expeditionary capabilities. They need to find a proper balance between the needs of the present and the requirements of 'the Army After Next'. Most Western military mod-

ernisation plans, such as the US Armed Forces' Joint Vision 2010, remain wedded to the ideal of engaging a massed conventional enemy. The difficulty with such symmetrical conflict scenarios is that they may bear little relationship to the likely asymmetric contingencies of the future.

Related to asymmetrical warfare is a fourth lesson of Kosovo. It is possible that the demonstration of overwhelming conventional air superiority by NATO may encourage the proliferation of weapons of mass destruction (WMD) by non-Western states. WMD – biological, chemical or nuclear – are probably likely to increase in the new century with dangerous implications for the stability of the international system.

The fifth lesson is that the air campaign in Kosovo may also have the unwelcome effect of encouraging the fantasy of bloodless war amongst Western politicians. Such a belief might lead to the imposition of rules of engagement that may be politically safe in terms of minimising casualties (especially in the short term) yet be contrary to military effectiveness (and risk higher casualties in the long term). As the American strategist, Eliot Cohen, has noted, 'air power is an unusually seductive form of military strength because, like modern courtship, it appears to offer gratification without commitment'.

There is a real danger that, in the future, air strikes may come to be seen as weapons of great military precision but which also symbolise Western political weakness and lack of strategic resolve. If adversaries come to believe that fear of a handful of casualties can paralyse statecraft, then the West risks eventual impotence. No credible foreign policy, no effective military strategy, no lasting international security system can be sustained on the basis of using force without a willingness to pay a price in human life.



In 1995, a US intelligence report on the air war in Bosnia warned:

Air power without political consensus in a hostile environment can be more of a liability than an asset . . . The humanitarian element is important but going in to 'do something' without a coherent strategy can lead to more death and destruction than before.

These were prophetic words. The Kosovo air war lacked a coherent strategy; it started as an attempt to avert ethnic cleansing; and ended as a war to reverse the ethnic cleansing that air power failed to avert.

This paradox is unlikely to deter air power advocates from claiming victory. After all, in the end the Milosevic regime surrendered to Western demands in a war in which aircraft and pilotless aerial weapons were the only military means that NATO directly employed. Yet, such a view is a simplistic reading of the outcome of this latest war in the Balkans. Several other factors combined with the air campaign to persuade Milosevic to sue for peace. The withdrawal of Russian support for Belgrade was almost certainly a key factor in Yugoslavia's capitulation; so too was the growing possibility of an eventual NATO ground offensive—the potential effects of which were highlighted by the success of the KLA in the last weeks of the war.

Finally, NATO is leaving this bloodiest of centuries with an ambiguous and morally troubling victory. In 1900, in a farewell to the 19th Century, the great American writer, Mark Twain, wrote that Western civilisation was returning from wars in China, South Africa and the Philippines 'bedraggled, besmirched and dishonoured . . . her worth full of pious hypocrisy. Give her soap and towel but hide the looking glass'. As we bid farewell to the 20th Century, the same words could easily be applied to NATO in Kosovo. ☞

BIOGRAPHY

Dr Michael Evans emigrated to Australia from Zimbabwe in 1988 and joined the Department of Defence in 1995 as Land Command Historian at Land Headquarters in Sydney. He was subsequently Research Historian in the Directorate of Army Research and Analysis at Army Headquarters in Canberra, and foundation Research Historian in the Army's 'think tank', the Land Warfare Studies Centre (LWSC). Dr Evans is currently a Senior Research Fellow in the LWSC. Dr Evans' published works cover insurgency, air power and amphibious warfare, military organisation, doctrine and operational issues. Dr Evans' most recent publications include the papers, *Strategic Manoeuvre: A Study in Military Method and Technique* (1996), *The Primacy of Doctrine: The United States Army and Military Innovation and Reform 1945-1995* (1996), *Western Armies and the Use of Military History Since 1945* (1997), *The Role of the Australian Army in a Maritime Concept of Strategy* (1998), and *Deterrence Theory in the Australian Strategic Context* (1999).



BY LIEUTENANT COLONEL D. GROSSMAN¹

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The psychology and physiology of close combat is a field that encompasses a wide variety of processes and negative impacts, all of which must be taken into consideration in any assessment of the immediate and long-term effects and costs of war. This paper will address the wide spectrum effects of war on the individual in close combat, including psychiatric casualties suffered during combat, physiological arousal and fear, the physiology of close combat, the price of killing, and post-traumatic stress disorder (PTSD).

INTRODUCTION: A LEGACY OF LIES

One obvious and tragic price of war is the toll of death and destruction. But, there is an additional effect – a psychological cost borne by the *survivors* of combat – and a full understanding of this cost has been too long repressed by a legacy of self-deception and intentional misrepresentation. After peeling away this ‘legacy of lies’ which has perpetuated and glorified warfare, there is no escaping the conclusion that combat, and the killing which lies at the heart of combat, is an extraordinarily traumatic and psychologically costly endeavor which profoundly impacts on all who participate in it.

This psychological and physiological effect of close combat is most readily observable and measurable at the individual level. At the national level, a country at war can anticipate a small but statistically significant increase in the domestic murder rate, probably due to the glorification of violence and the resultant reduction in the level of ‘repression’ of natural aggressive instincts – which Freud held to be essential to the existence of civilisation. At the group level, even the most elite unit is usually psychologically destroyed when 50-to-60 per cent casualties has been inflicted, and the integration of the individual into the group is so strong that this destruction often leads to depression and suicide. However, the nation (if not eliminated by the war) is generally resilient, and the group (if not destroyed) is inevitably disbanded. But the individual who survives combat may well end up paying a profound psychological cost for a lifetime. The cumulative impact of these effects on hundreds of thousands of veterans has significant potential to have a profound effect on society at large.

PSYCHIATRIC CASUALTIES IN WAR

Richard Gabriel has noted that, ‘Nations customarily measure the “costs of war” in dollars, lost production, or the number of soldiers killed or wounded’; but, ‘rarely do military establishments attempt to measure the costs of war in terms of individual suffering. Psychiatric breakdown remains one of the most costly items of war when expressed in human terms’. Indeed, for the combatants in every major war fought in this century, there has been a greater probability of becoming a psychiatric casualty than of being killed by enemy fire.

A psychiatric casualty is a combatant who is no longer able to participate in combat due to mental (as opposed to physical) debilitation. Psychiatric casualties seldom represent a permanent debilitation; and, with proper care, they can be rotated back into the line. (However, Israeli research has demonstrated that, after combat, psychiatric casualties are strongly predisposed toward the more long-term and more permanently debilitating manifestation of PTSD.)

The actual psychiatric casualty can manifest itself in many ways, ranging from affective disorders to somatoform disorders; but, the treatment for the many manifestations of combat stress involves simply removing the soldier from the combat environment. But, the problem is that the military does not want to simply return the psychiatric casualties to normal life, they want to return them to combat—understandably, these casualties can be reluctant to do so.

The evacuation syndrome is the paradox of combat psychiatry. A nation must care for its psychiatric casualties, since they are of no value on the battlefield (indeed, their presence in combat can have a negative impact on the morale of other combatants); and, they can still be used again as valuable seasoned replacements once they've recovered from combat stress. But if combatants begin to realise that 'insanity' or instability is a ticket to evacuation, then the number of psychiatric casualties will increase dramatically.

Continued 'proximity' to the battlefield (through forward treatment, usually within enemy artillery range) combined with an 'expectancy' of rapid return ('immediacy') to combat, are the principles developed to overcome the paradox of the evacuation syndrome. These principles of proximity, expectancy, and immediacy have proven themselves quite effective since World War I. They permit the psychiatric casualty to get the rest which is the only current cure for his problem, while not giving a message to still healthy comrades that insanity is a ticket away from the madness of the battlefield.

But, even with the careful application of the principles of proximity, expectancy and immediacy, the incidence of psychiatric casualties is still enormous. During World War II, 504 000 men were lost from America's combat forces due to psychiatric collapse—enough to man fifty divisions. The US suffered this loss despite efforts to weed out those mentally and emotionally unfit for combat by classifying over 800 000 men 4-F (unfit for military service) due to psychiatric reasons. At one point in World War II, psychiatric casualties were being discharged from the US Army faster than new recruits were being drafted in.

Swank and Marchand's World War II study of US Army combatants on the beaches of Normandy found that after 60 days of continuous combat, 98 per cent of the surviving soldiers had become psychiatric casualties and, the remaining two per cent were identified as 'aggressive psychopathic personalities'. Thus, it is not too far from the mark to observe that there is something about continuous, inescapable combat which will drive 98 per cent of all men insane, and the other two per cent were crazy when they got there. Figure 1 presents a schematic representation of the effects of continuous combat.

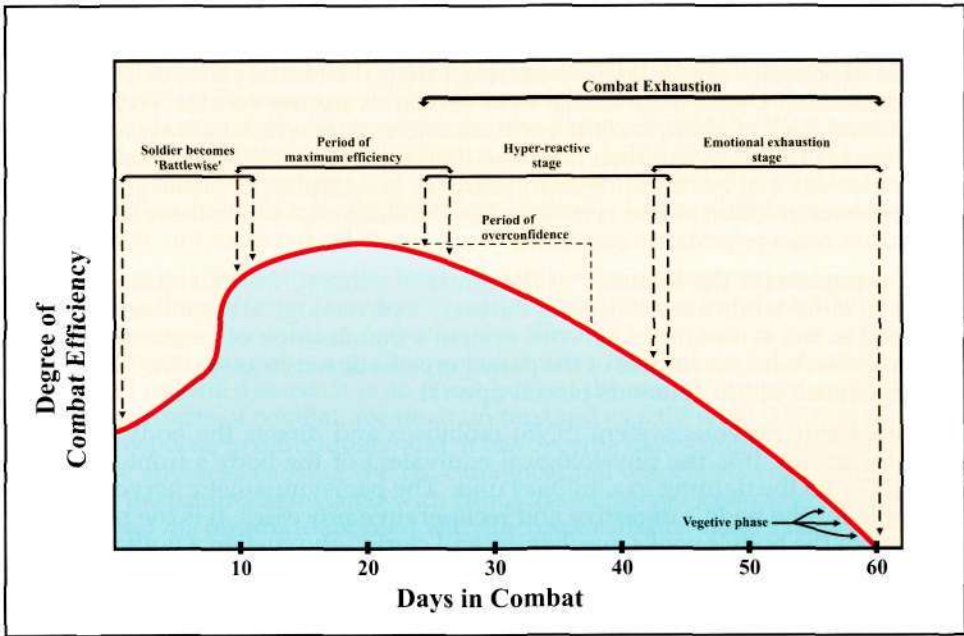


Figure 1. Effects of Continuous Combat

It must be understood that the kind of continuous, protracted combat which produces such high psychiatric casualty rates is largely a product of 20th Century warfare. The Battle of Waterloo only lasted a day. Gettysburg only lasted three days – and they took the nights off. It was only in World War I that armies began to experience continuous months of 24-hour combat, and it is in World War I that vast numbers of psychiatric casualties were first observed.

The democratic nations of this century have been better than most at admitting and dealing with their combat psychiatric casualties; and, although information from non-Western sources is extremely limited, we now know that America's World War II experience is representative of a universal cost of modern, protracted warfare. Armies around the world have experienced similar mass psychiatric casualties, but many have simply driven these casualties into battle at bayonet point, shooting those who refused or were unable to continue. World War II Japanese units employed a unique set of powerful cultural and group processes to delay psychiatric breakdown; but, they only succeeded in temporarily delaying the cost of combat, a cost which often manifested itself in mass suicide. Ultimately, the toll of modern combat is truly fearful; and, no nation or culture has been able to escape it.

PHYSIOLOGICAL AROUSAL AND FEAR

The soldier in combat endures many indignities. Among these can be endless months and years exposed to desert heat, sweltering jungle, torrential rains, or frozen mountains and tundras. Usually, the soldier lives amidst swarming vermin. Very often, there is lack of food, lack of sleep, and the constant uncertainty which eats away at the combatants' sense of control over their lives and their environment. But, bad as they are, all of these stressors can be found in many cultural, geographic, or social circumstances, and when the ingredient of war is removed individuals exposed to these circumstances do not suffer mass psychiatric casualties.

To fully comprehend the intensity of the stress of combat, we must keep these other stressors in mind while understanding the body's physiological response to combat, as manifested in the sympathetic nervous system's mobilisation of resources. And then, we must understand the impact of the parasympathetic nervous system 'backlash' that occurs as a result of the demands placed upon it.

The sympathetic nervous system (SNS) mobilises and directs the body's energy resources for action. It is the physiological equivalent of the body's front-line soldiers who actually do the fighting in a military unit. The parasympathetic nervous system is responsible for the body's digestive and recuperative processes. It is the physiological equivalent of the body's cooks, mechanics, and clerks who sustain a military unit over an extended period of time.

Usually, the body maintains itself in a state of homeostasis which ensures that the sympathetic and parasympathetic nervous systems maintain a daily balance between their demands upon the body's resources. But, during extremely stressful circumstances the 'fight or flight' response kicks in and the SNS mobilises all available energy for survival. This is the physiological equivalent of throwing the cooks, mechanics, and clerks into the battle. This process is so intense that soldiers very often suffer stress diarrhoea due to redirecting of energies from non-essential parasympathetic processes, and it is not at all uncommon to lose control of urination and defecation as the body literally 'blows its ballast' and redirects all available energy in an attempt to provide the resources required to ensure survival. This is reflected in World War II surveys in which a quarter of combat veterans admitted that they urinated in their pants in combat, and approximately the same percentage admitted that they defecated in their pants in combat.

A combatant must pay a physiological price for an enervating process this intense. The 'price' that the body pays is an equally powerful 'backlash' when the neglected demands of the parasympathetic nervous system become ascendant. This parasympathetic backlash occurs as soon as the danger and the excitement is over, and it takes the form of an incredibly powerful weariness and sleepiness on the part of the soldier.

Napoleon stated that the moment of greatest danger was the instant immediately after victory; and, in saying so, he demonstrated a powerful understanding of the way in which soldiers become physiologically and psychologically incapacitated by the parasympathetic backlash that occurs as soon as the momentum of the attack has halted and the soldier briefly believes himself to be safe. During this period of vulnerability, a counterattack by fresh troops can have an effect completely out of proportion to the number of troops attacking.

It is basically for this reason that the maintenance of an 'unblown' reserve has historically been essential in combat, with battles often revolving around which side can hold out and deploy their reserves last. Clausewitz understood the danger of reserve forces becoming prematurely enervated and exhausted (and he provides insight into the root

cause of the enervation) when he cautioned that the reserves should always be maintained out of sight of the battle.

In continuous combat, the soldier roller-coasters through a seemingly endless series of these surges of adrenalin and their subsequent backlashes; and, the body's natural, useful, and appropriate response to danger ultimately becomes extremely counterproductive. Unable to flee, and unable to overcome the danger through a brief burst of fighting, posturing or submission, the bodies of modern soldiers in sustained combat exhaust their capacity to enervate and slide into a state of profound physical and emotional exhaustion of such a magnitude that is almost impossible to communicate to those who have not experienced it.

Most observers of combat lump the impact of this physiological arousal process under the general heading of 'fear', but fear is really a cognitive or emotional label for non-specific physiological arousal in response to a threat. The impact of fear and its attendant physiological arousal is significant, but it must be understood that fear is just a symptom and not the disease: it is an effect but not the cause. To truly understand the psychological effects of combat, we must understand exactly what it is that causes this intense fear response in individuals; and, it has become increasingly clear that there are two key, core stressors causing the psychological toll associated with combat. These stressors are the trauma associated with being the victim of close-range, interpersonal aggression; and the trauma associated with the responsibility to kill a fellow human being at close range.

THE TRAUMA OF CLOSE-RANGE, INTERPERSONAL AGGRESSION

During World War II, the carnage and destruction caused by months of continuous German bombing in England and years of Allied bombing in Germany was systematically inflicted in order to create psychological casualties among civilian populations. Day and night, in an intentionally unpredictable pattern, for months and even years on end, relatives and friends were mutilated and killed and homes were destroyed. These civilian populations suffered fear and horror of a magnitude such as few humans will ever experience.

This unpredictable, uncontrollable reign of shock, horror, and terror is exactly what psychiatrists and psychologists prior to World War II believed to be responsible for the vast numbers of psychiatric casualties suffered by soldiers in World War I. This mistaken belief laid the theoretical foundation for the German and Allied strategic bombing campaigns in World War II. Thus, it came as a significant shock when the Rand Corporation's Strategic Bombing Study published in 1949 found that there was only a very slight increase in the psychological disorders in these populations as compared to peacetime rates and that these occurred primarily among individuals already predisposed to psychiatric illness. These bombings which were intended to break the will of the population appear to have served primarily to harden the hearts and increase the determination to fight among those who endured them.

The impact of fear, physiological arousal, horror and physical deprivation in combat should never be underestimated, but it has become clear that other factors are responsible for psychiatric casualties among combatants. One of those factors is the impact of close-range, interpersonal, aggressive confrontation. Through roller coasters, action and horror movies, drugs, rock climbing, white water rafting, scuba diving, parachuting, hunting, contact sports, and a hundred other means, modern society pursues fear. Fear in and of itself is seldom a cause of trauma in everyday peacetime existence; but, facing close-range interpersonal aggression and hatred from fellow citizens is a horrifying experience of an entirely different magnitude.

The ultimate fear and horror in most modern lives is to be raped, tortured, or beaten; to be physically degraded in front of loved ones; or to have the sanctity of the home invaded by aggressive and hateful intruders. The Diagnostic and Statistical Manual of the American Psychiatric Association affirms this when it notes that PTSD '...may be especially severe or longer lasting when the stressor is of human design'. PTSD resulting from natural disasters such as tornadoes, floods, and hurricanes is comparatively rare and mild; but, acute cases of PTSD will consistently result from torture or rape. Ultimately, like tornadoes, floods, and hurricanes, bombs from 20 000 feet are simply not 'personal' and are significantly less traumatic – to both the victim and aggressor.

Death or debilitation is statistically far more likely to occur by disease or accident than by malicious action, but statistics have nothing to do with fear. Statistically speaking, cigarette smoking is an extraordinarily dangerous activity which annually inflicts slow, hideous deaths upon millions of individuals world-wide; but, this fact does not dissuade millions of individuals from smoking, and around the globe few nations are motivated to pass laws to protect their citizens from this threat. But, the presence of one serial rapist in a large city can change the behavior of hundreds of thousands of individuals; and, there is a broad tradition of laws designed to protect citizens from rape, assault, and murder.

When snakes, heights or darkness causes an intense fear reaction in an individual it is considered a phobia, a dysfunction or an abnormality. But, it is very natural and normal to respond to an attacking, aggressive fellow human being with a phobic-scale response. This is a universal human phobia. More than anything else in life, it is intentional, overt, *human* hostility and aggression which assaults the self image, sense of control and, ultimately, the mental and physical health of human beings.

The soldier in combat is inserted straight into the inescapable midst of this most psychologically traumatic of environments. Ultimately, if unable get some respite from the trauma of combat, and if not injured or killed, the only escape available to the combatant is the psychological escape of becoming a psychiatric casualty and mentally fleeing the battlefield.

THE PHYSIOLOGY OF CLOSE COMBAT

An understanding of the stress of close combat begins with an understanding of the physiological response to close-range interpersonal aggression. The traditional view of combat stress is most often associated with combat fatigue and PTSD, which are actually manifestations that occur after, and as a result of, combat stress. The debilitating effects of combat stress have been recognised for centuries. Phenomena such as tunnel vision, auditory exclusion, the loss of fine and complex motor control, irrational behavior, and the inability to think clearly have all been observed as by-products of combat stress. Even though these phenomena have been observed and documented for hundreds of years, very little research has been conducted to understand why combat stress deteriorates performance.

The key characteristic which distinguishes combat stress is the activation of the SNS. The SNS is activated any time the brain perceives a threat to survival, resulting in immediate discharge of stress hormones. This 'mass discharge' is designed to prepare the body for fight or flight. The response is characterised by increasing arterial pressure and blood flow to large muscle mass (resulting in increased strength capabilities and enhanced gross motor skills – such as running from or charging into an opponent); vasoconstriction of blood vessels in the appendages (which serves to reduce bleeding from wounds); pupil dilation; cessation of digestive processes; and muscle tremors. Figure 2 presents a schematic representation of the effects of hormone-induced heart rate increase resulting from SNS activation.

HEART RATE

(Beats Per Minute)

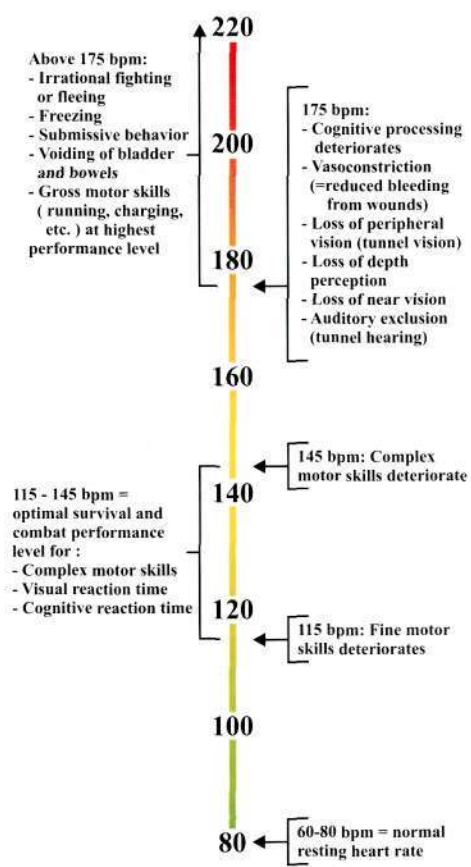


Figure 2. Effects of Hormonal Induced Heart Rate Increase

NOTES ON GRAPHIC

1. This data is for hormonal induced heart rate increases resulting from sympathetic nervous system arousal. Exercise induced increases will not have the same effect.
2. Hormonal induced performance and strength increases can achieve 100 per cent pf potential max within 10 seconds, but drop to 55 per cent after 30 seconds, 35 per cent after 60 seconds, and 31 per cent after 90 seconds. It takes a minimum of 3 minutes of rest to 'recharge' the system.
3. Any extended period of relaxation after intense sympathetic nervous system arousal can result in a parasympathetic backlash, with significant drops in energy level, heart rate and blood pressure. This can manifest itself as normal shock symptoms (dizziness, nausea and/or vomiting, paleness, clammy skin) and/or profound exhaustion.

The activation of the SNS is automatic and virtually uncontrollable. It is a reflex triggered by the perception of a threat. Once initiated, the SNS will dominate all voluntary and involuntary systems until the perceived threat has been eliminated or escaped, performance deteriorates, or the parasympathetic nervous system activates to re-establish homeostasis.

The degree of SNS activation centers around the level of perceived threat. For example, low-level SNS activation may result from the anticipation of combat. This is especially common with police officers or soldiers minutes before they make a tactical assault into a potentially deadly force environment. Under these conditions combatants will generally experience increases in heart rates and respiration, muscle tremors, and a psychological sense of anxiety.

In contrast, high level SNS activation occurs when combatants are confronted with an unanticipated deadly force threat and the time to respond is minimal. Under these conditions, the extreme effects of the SNS will cause catastrophic failure of the visual, cognitive, and motor control systems.

Once activated, the SNS causes immediate physiological changes of which the most noticeable and easily monitored is increased heart rate. SNS activation can drive the heart rate from an average of 70 beats per minute (BPM) to over 200 BPM in less than a second. And, as combat stress increases, heart rate and respiration will also increase until threat elimination or escape, catastrophic failure, or until the parasympathetic nervous system is triggered.

In 1950, S.L.A. Marshall's *The Soldier's Load and the Mobility of a Nation* was one of the first studies to identify how combat performance deteriorates when exposed to combat stress. Marshall concluded that we must reject '...the superstition that under danger men can be expected to have more than their normal powers, and that they will outdo their best efforts simply because their lives are in danger'. Indeed, in many ways, the reality is just the opposite and individuals under stress are far less capable of doing anything other than blindly running from or charging toward a threat. Humans have three primary survival systems: vision, cognitive processing, and motor skill performance. Under stress, all three break down.

Alexis Artwohl, a police psychologist in Portland, Oregon, has conducted post-combat interviews with police officers. In her research she has found that almost nine-out-of-ten of her subjects experienced diminished sound (in some cases so severe that a shotgun going off in front of an officer's face was not even heard, and did not cause a ringing in the ears afterward), while nearly two out of ten experienced intensified sounds—usually occurring in night combat situations. Eight-out-of-ten experienced tunnel vision, and more than six-out-of-ten experienced 'slow-motion time' and heightened visual clarity. Research continues in this area, but it is increasingly obvious that there is a profound and severe set of physiological responses to combat, responses that have previously been largely unsuspected. (See table 1 – Perceptual Distortions in Combat.)

TABLE 1. PERCEPTUAL DISTORTIONS EXPERIENCED IN COMBAT ²

| | |
|------|---------------------------------------|
| -88% | Diminished sound (auditory exclusion) |
| -82% | Tunnel vision |
| -78% | Automatic Pilot |
| -63% | Slow Motion Time |
| -63% | Heightened Visual Clarity |
| -61% | Memory Loss For Parts of the Event |
| -60% | Memory Loss for Some of Your Actions |
| -50% | Dissociation (detachment) |
| -36% | Intrusive Distracting Thoughts |
| -19% | Memory Distortions |
| -17% | Intensified Sounds |
| -17% | Fast Motion Time |
| -11% | Temporary Paralysis |

Bruce K. Siddle’s landmark research at PPCT involved monitoring the heart rate responses of law enforcement officers in interpersonal conflict simulations using paintball-type simulation weapons. This research has consistently recorded heart rate increases to well over 200 BPM, with brief heart rates ‘spikes’ of up to 300 BPM.

The simunition pellets fired from real guns *hurt* when they hit; and, thus, in these simulations, the combatants faced the universal human phobia – another human being who was trying to hurt them. Still, they knew that their life was not in danger. The difference between this and real combat is like the difference between a boxing match and a knife fight. The combatant in a true, life-and-death situation will probably experience a physiological reaction even greater than that of Siddle’s subjects.

The fundamental truth of modern combat is that the stress of facing close-range interpersonal aggression is so great that, if endured for months on end without any other means of respite or escape, the combatant will inevitably become a psychiatric casualty. But, even greater than the resistance to being the *victim* of close-range aggression is the combatant’s powerful aversion to *inflicting* aggression on fellow human beings. And, at the heart of this dread is the average, healthy person’s resistance to killing one’s own kind.

A RESISTANCE TO KILLING

There is a notable reduction in the kind of psychiatric casualties usually identified with long-term exposure to combat among medical personnel, chaplains, officers, and soldiers on reconnaissance patrols behind enemy lines. The key factor which is not present in each of these situations is that, although they are in the front lines and the enemy may attempt to kill them, they have no direct responsibility to personally participate in close-range killing activities. Even when there is equal or even greater danger of dying, combat is much less stressful if you don't have to kill.

The existence of a resistance to killing lies at the heart of this dichotomy between killers and non-killers. This is an additional, final stressor which the combatant must face. To truly understand the nature of this resistance to killing, we must first recognise that most participants in close-combat are literally 'frightened out of their wits'. Once the bullets start flying, the effects of vasoconstriction are such that blood flow to the forebrain begins to shut down. Combatants stop thinking with the forebrain, which is the part of the brain which makes us human, and start thinking with the midbrain, or mammalian brain, which is the primitive part of the brain that is generally indistinguishable from any other mammal's.

This process of the midbrain 'hijacking' of the forebrain is at the core of most severe combat effects. This effect is to the combatant what the fundamentals of combustion and backdraft are to the fireman. In conflict situations, this primitive, midbrain processing can be observed in the existence of a powerful resistance to killing one's own kind. During territorial and mating battles, animals with antlers and horns slam together in a relatively harmless head-to-head fashion, rattlesnakes wrestle each other, and piranha fight their own kind with flicks of the tail; but, against any other species, these creatures unleash their horns, fangs, and teeth without restraint. This is an essential survival mechanism which prevents a species from destroying itself during territorial and mating rituals.

One major modern revelation in the field of military psychology is the observation that this resistance to killing one's own species is also a key factor in human combat. Brigadier General S.L.A. Marshall first observed this during his work as a official historian in the Pacific and European Theatre of Operations in World War II. Based on his post-combat interviews, Marshall concluded in his landmark book, *Men Against Fire*, that only 15 to 20 per cent of the individual riflemen in World War II fired their weapons at an exposed enemy soldier. Soldiers using crew-served weapons, such as a machine gun, almost always fired. Soldiers using key weapons, such as a flame thrower, usually fired. And, firing would increase greatly if a nearby leader demanded that the soldier fire. But, when left to their own devices, the great majority of individual combatants throughout history appear to have been unable or unwilling to kill.

Marshall's findings have been somewhat controversial. Faced with scholarly concern about a researcher's methodology and conclusions, the scientific method involves replicating the research. In Marshall's case, every available parallel, scholarly study validates his basic findings of a powerful resistance in human beings against the close-range killing of one's own species. Ardant du Picq's surveys of French officers in the 1860s and his observations on ancient battles, Keegan and Holmes' numerous accounts of ineffectual firing throughout history, Richard Holmes' assessment of Argentine and British firing rates in the Falklands War, Paddy Griffith's data on the extraordinarily low killing rate among Napoleonic and American Civil War infantry regiments, the British Army's laser re-enactments of historical battles, the FBI's studies of non-firing rates among law enforcement officers in the 1950s and 1960s, and countless other individual and anecdotal observations all confirm Marshall's fundamental conclusion that man is not, by nature, a killer.

The exception to this resistance can be observed in sociopaths who, by definition, feel no empathy or remorse for their fellow human beings. Pit bull dogs have been selectively bred for sociopathy, bred for the absence of the resistance to killing one's own kind in order to ensure that they will perform the unnatural act of killing another dog in battle. Similarly, human sociopaths represent Swank and Marchand's two per cent who did not become psychiatric casualties after months of continuous combat, since they were not disturbed by the requirement to kill. But, sociopaths would be a flawed tool which is impossible to control in peacetime, and social dynamics make it very difficult for humans to breed themselves for such a trait. However, humans *are* very adept at finding mechanical means to overcome natural limitations. Humans were born without the ability to fly, so we found mechanisms which overcame this limitation and enabled flight. Humans also appear to have been born without the ability to kill our fellow humans; so, throughout history, we have devoted great effort to finding a way to overcome this resistance. From a psychological perspective, the history of warfare can be viewed as a series of successively more effective tactical and mechanical mechanisms to enable or force combatants to overcome their resistance to killing.

OVERCOMING THE RESISTANCE TO KILLING

By 1946, the US Army had accepted Marshall's conclusions, and the Human Resources Research Office of the US Army subsequently pioneered a revolution in combat training which eventually replaced firing at bullseye targets with deeply ingrained 'conditioning' using realistic, man-shaped pop-up targets that fall when hit. Psychologists know that this kind of powerful 'operant conditioning' is the only technique which will reliably influence the primitive, mid-brain processing of a frightened human being – just as fire drills condition terrified school children to respond properly during a fire, and repetitious, 'stimulus-response' conditioning in flight simulators enables frightened pilots to respond reflexively to emergency situations.

Throughout history, the ingredients of groups, leadership, and distance have been manipulated to enable and force combatants to kill; but, the introduction of conditioning in modern training was a true revolution. The application and perfection of these basic conditioning techniques increased the rate of fire from nearly 20 per cent in World War II to approximately 55 per cent in Korea and around 95 per cent in Vietnam. Similar high rates of fire resulting from modern conditioning techniques can be seen in FBI data on law enforcement firing rates since the nation-wide introduction of modern conditioning techniques in the late 1960s. Figure 3 presents a schematic representation of the interaction between the killing enabling factors which have been manipulated throughout history, including the key, modern ingredient of conditioning.

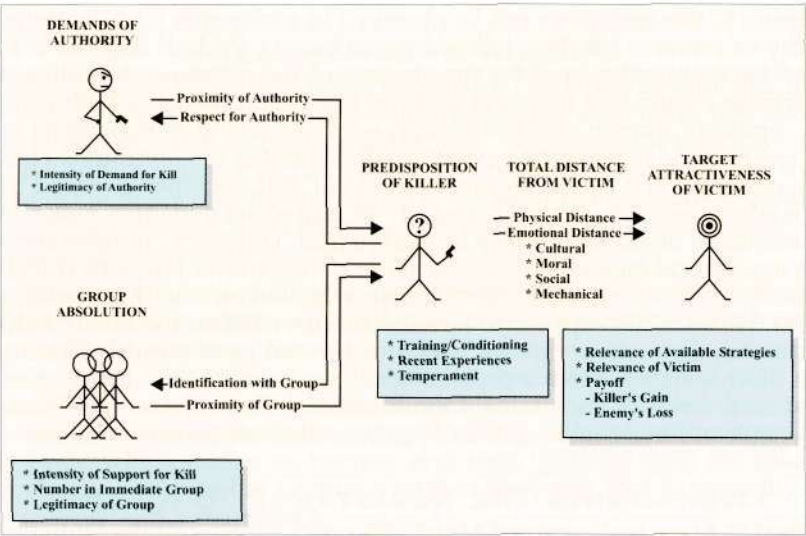


Figure 3. Killing Enabling Factors

One of the most dramatic examples of the value and power of this modern, psychological revolution in training can be seen in Richard Holmes' observations of the 1982 Falklands War. The superbly trained (that is, 'conditioned') British forces were without air or artillery superiority and were consistently outnumbered three-to-one while attacking the poorly trained but well equipped and carefully dug-in Argentine defenders. Superior British firing rates (which Holmes estimates to be well over 90 per cent), resulting from modern training techniques, has been credited as a key factor in the series of British victories in that brief but bloody war. Any future army which attempts to go into battle without similar psychological preparation is likely to meet a fate similar to that of the Argentines.

THE PRICE OF OVERCOMING THE RESISTANCE TO KILLING

The extraordinarily high firing rate resulting from modern conditioning processes was a key factor in America's ability to claim that US ground forces never lost a major engagement in Vietnam. But, conditioning which overrides such a powerful, innate resistance carries with it enormous potential for psychological backlash. Every warrior society has a 'purification ritual' to help returning warriors deal with their 'blood guilt' and to reassure them that what they did in combat was 'good'. In primitive tribes, this generally involves ritual bathing, ritual separation (which serves as a cooling-off and 'group therapy' session), and a ceremony embracing the veteran back into the tribe. Modern Western rituals traditionally involve long periods while marching or sailing home, parades, monuments, and the unconditional acceptance of society and family.

Table 2 outlines some of the key factors in the killing experience rationalisation and acceptance processes, using the example of US troops in Vietnam as a case study of an extreme circumstance in which the purification rituals broke down. For example, combatants do not do what they do in combat for medals — they are motivated largely by a concern for their comrades; but after the battle medals serve as a kind of 'Get Out of Jail Free Card'. It is a powerful talisman which proclaims to them and to others that what the combatant did was honorable and acceptable. Although medals were issued in Vietnam, the social environment was such that veterans could not wear the medals or

their uniforms in public. Similarly, the young combatant needs the presence of mature, older comrades from whom to seek guidance and support; but, in the latter years of the war in Vietnam, the average age of the combatant was 19, as opposed to 26 in World War II. Other key factors unique to the American experience in Vietnam include the absence of any truly safe, secure area in-country; the individual replacement system which hampered bonding and ensured that soldiers often arrived and left as strangers; and the use of aircraft to immediately return veterans to America, without the usual cool-down, group therapy period experienced for thousands of years as veterans sailed or marched home.

TABLE 2. KILLING EXPERIENCE RATIONALISATION AND ACCEPTANCE PROCESSES

| <i>Process</i> | <i>Past Wars</i> |
|---|------------------|
| Vietnam | |
| Praise from peers and superiors (medals, citations) Yes (Not Worn) | Yes |
| The presence of mature, older comrades No (Reduced) | Yes |
| Circumstances limiting civilian kills/atrocities No (Reduced) | Yes |
| Rear lines and safe areas No | Yes |
| Presence of close, trusted friends throughout the war No | Yes |
| Cool-down period with comrades while returning home No | Yes |
| Knowledge of victory, gain, and accomplishments No | Yes |
| Parades and monuments No (Delayed) | Yes |
| Reunions and continued comms with comrades after the war No | Yes |
| Acceptance and praise from friends, family, and society No (Mixed) | Yes |
| Support to veteran from religious and political systems No (Mixed) | Yes |

For America's Vietnam veterans, the purification ritual was largely denied; and, a host of studies have demonstrated that one of the the most significant causal factors in PTSD is the lack of support structure after the traumatic event, which in this case occurred when the returning veteran was attacked and condemned in an unprecedented manner. The traditional horrors of combat were magnified by modern conditioning techniques, and this combined with the nature of the war and an unprecedented degree of societal condemnation to create a circumstance which resulted in between 0.5 and 1.5 million cases (the results of studies vary greatly) of PTSD among the 3.5 million US veterans of Southeast Asia. This mass incidence of psychiatric disorders among Vietnam veterans resulted in the 'discovery' of PTSD—a condition which we now know has always occurred as a result of warfare, but never before in this quantity.

Armies around the world have integrated these lessons from Vietnam, and in Britain's Falklands War, Israel's 1982 Lebanon Incursion, and in the US's Gulf War and the need for the purification ritual have been closely and carefully considered and applied. In the former USSR's Afghanistan War this need was again ignored; and, the resulting social turmoil was one of the factors that eventually led to the collapse of that nation. Indeed, the Weinberger Doctrine (later referred to as the Powell Doctrine) which holds that the US will not engage in a war without strong societal support, is a reflection of the tragic lessons learned from the psychological effects of combat in Vietnam.

PTSD is a psychological disorder resulting from a traumatic event. PTSD manifests itself in persistent re-experiencing of the traumatic event, numbing of emotional responsiveness, and persistent symptoms of increased arousal, resulting in clinically significant distress or impairment in social and occupational functioning. There is often a long delay time between the traumatic event and the manifestation of PTSD. Among Vietnam Veterans in the US, PTSD has been strongly linked with greatly increased divorce rates, increased incidence of alcohol and drug abuse, and increased suicide rates. Indeed, some studies indicate that, as of 1996, three times more Vietnam veterans have died from suicide after the war than died from enemy action during the war; and, this number is increasing every year.

But, PTSD seldom results in violent criminal acts; and, the US Bureau of Justice Statistics research indicates that veterans, including Vietnam veterans, are statistically less likely to be incarcerated than a non-veteran of the same age. The key safeguard in this process appears to be the deeply ingrained discipline which the soldier internalises with military training. However, with the advent of interactive 'point-and-shoot' arcade and video games, there is significant concern that society is aping military conditioning, but without the vital safeguard of discipline.

There is strong evidence to indicate that the indiscriminate civilian application of combat conditioning techniques as entertainment (specifically graphic visual displays of violence in television, movies and video games) may be a key factor in world-wide, skyrocketing violent crime rates, including a seven-fold increase in per capita aggravated assaults in America since 1956; a five-fold increase in assault in Canada since 1964; and (according to InterPol data) the per capita 'serious assault rate' between 1978 and 1993 has increased approximately five-fold in Norway and Greece, four-fold in Australia and New Zealand, three-fold in Sweden, and it approximately doubled in a half dozen other European nations. (See table 3 – International Violent Crime rates.) Thus, the psychological effects of combat can increasingly be observed on the streets of nations around the world.

TABLE 3. INTERNATIONAL VIOLENT CRIME RATES

| <i>Serious Assault</i> | | | | <i>Murder</i> | | |
|--------------------------------|-------------|-------------|-----------------|---------------|-------------|-----------------|
| | <i>1977</i> | <i>1993</i> | <i>Increase</i> | <i>1977</i> | <i>1993</i> | <i>Increase</i> |
| Australia ¹ | 21.9 | 81.3 | +3.7x | 2.8 | 4.5 | +1.6x |
| Belgium | 65.9 | 125.0 | +1.9x | 2.2 | 3.1 | +1.4x |
| Canada ² | 447.0 | 916.0 | +2.0x | 3.0 | 2.0 | - |
| Denmark | 78.7 | 179.0 | +2.3x | 2.5 | 45.8 | +1.9x |
| England -Wales ¹ | 163.0 | 362.0 | +2.2x | 1.4 | 2.5 | +1.8x |
| France | 59.8 | 99.0 | +1.7x | 3.4 | 4.9 | +1.4x |
| Greece | 14.4 | 68.4 | +4.8x | 1.2 | 2.5 | +2.1x |
| Hungary ³ | 45.1 | 76.9 | +1.7x | 3.5 | 4.5 | +1.3x |
| Netherlands ⁴ | 101.1 | 196.0 | +1.9x | 8.3 | 27.4 | +3.3x |
| New Zealand ¹ | 83.4 | 313.0 | +3.8x | 1.8 | 4.0 | +2.2x |
| Norway | 12.8 | 62.0 | +4.8x | .7 | 2.5 | +3.6x |
| Scotland ⁵ | 53.0 | 123.0 | +2.3x | 8.4 | 11.4 | +1.4x |
| Sweden | 17.3 | 51.1 | +3.0x | 4.8 | 8.8 | +1.8x |
| United States | 241.0 | 440.0 | +1.8x | 8.8 | 9.5 | +1.1x |

NOTES ON TABLE

1. Data is only through the following dates, when the indicated nations stopped reporting to Interpol: Australia, 1988; England Wales, 1991; India, 1991; and New Zealand, 1992.
2. Canada does not report crime data to Interpol; Canadian data is from the Canadian Center for Justice.
3. Data begins in 1980, when Hungary started reporting to Interpol.
4. Netherlands did not begin reporting 'serious assault' data to Interpol until 1981, but 'murder' data begins in 1977.
5. Scotland's 'serious assault' data begins in 1977, but 'murder' data begins in 1985 (when they apparently started reporting murder under a broader definition) and both 'murder' and 'serious assault' data only run through 1991 when Scotland stopped reporting to Interpol.

All data represents incidents per 100 000 population, as reported by each nation to Interpol and recorded in Interpol International Crime Statistics, Vols 1977 to 1994. (Except for Canadian data, as stated above in

Note 2.) Different nations use different criteria to define 'murder' and 'serious assault'; therefore, the ability to use this data to compare between nations is limited, but comparisons of increases within each nation across time is valid. This information was previously reported in a different format in *On Killing*, (c)1996, Dave Grossman.

CONCLUSION: A CULTURAL CONSPIRACY

It is often said that 'all's fair in love and war'; and, this expression provides a valuable insight into the human psyche, since these twin, taboo fields of sexuality and aggression represent the two realms in which most individuals will consistently deceive both themselves and others. Our psychological and societal inability to confront the truth about the effects of combat is the foundation for the cultural conspiracy of repression, deception and denial which has helped to perpetuate and propagate a highly unrealistic and potentially destructive image of the reality of war throughout recorded history.

In the field of developmental psychology, a mature adult is sometimes defined as someone who has attained a degree of insight and self control in the two areas of sexuality and aggression. This is also a useful definition of maturity in civilisations. Thus, two important and reassuring trends in recent years have been the development of the science of human sexuality, which has been termed 'sexology', and a parallel development of the science of human aggression, which this author has termed 'killology'. There is clear consensus that continued research in this previously taboo realm of human aggression is vital to the future development, and perhaps to the very existence, of our civilisation. ✂

ENDNOTES

1. *Killology Research Group*. Note: This paper is built in part upon papers previously published by the same author in the *Oxford Companion to American Military History* and the *Academic Press Encyclopedia of Violence, Peace and Conflict*.
2. From *Deadly Force Encounters* by Dr. Alexis Artwohl & Loren Christian, based on post-combat surveys of 72 Officers.

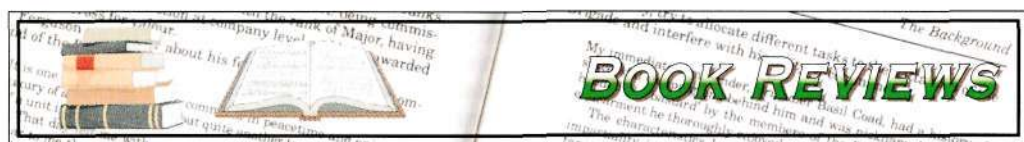
BIBLIOGRAPHY

- Artwohl, A. & Christian, L., *Deadly Force Encounters*, Paladin Press, Boulder Colorado, 1997.
- Gabriel, R. A., *No More Heroes: Madness and Psychiatry in War*, Hill and Wang, New York, 1987.
- Greene, B., *Homecoming*, G. P. Putnam's Sons, New York, 1989.
- Griffith, P., *Battle Tactics of the (American) Civil War*, London, 1989.
- Grossman, D., *On Killing: The Psychological Cost of Learning to Kill in War and Society*, Little, Brown, and Co, New York, 1995, 1996.
- Holmes, R., *Acts of War: The Behavior of Men in Battle*, The Free Press, New York, 1985.
- Keegan, J., *The Face of Battle*, The Chaucer Press, Harmondsworth, England, 1976.
- Keegan, J. and Holmes, R., *Soldiers*, Hamish Hamilton, London, 1985.
- Marshall, S. L. A., *Men against Fire*, Peter Smith, Gloucester Mass, 1978.
- Siddle, B.K., *Sharpening the Warrior's Edge: The Psychology and Science of Training*, PPCT Management Systems, Millstadt Illinois, 1995.

Swank, R. L. and Marchand, W. E., 'Combat neuroses: Development of combat exhaustion', *Archives of Neurology and Psychology*, p. 55, pp. 236-247, 1946.

BIOGRAPHY

Lieutenant Colonel Dave Grossman was an officer in the United States Army for over 20 years, including long service as a ranger. He is a graduate of the British Army Staff College, Camberley and has served on the teaching staff at the United States Military Academy, West Point. Most recently he was Professor of Military Science at Arkansas State University. His most recent book is *On Killing: The Psychological Cost of Learning to Kill in War and Society* (Little, Brown and Company, 1996). This book is in its sixth printing in the United States, and has recently been translated into Japanese and Italian. He is also a contributor to the *Oxford Companion to American Military History*.



AN INTIMATE HISTORY OF KILLING: FACE-TO-FACE KILLING IN TWENTIETH CENTURY WARFARE

**BY JOANNA BOURKE, GRANTA, 564 PAGES,
RETAILING AT \$49.95.**

A REVIEW BY DOCTOR A.M. RYAN

'It is well that war is so terrible – we should grow too fond of it.' In his statement, Robert E. Lee acknowledged that some people could enjoy some aspects of war, but recognised that, at its core, war is too horrible to sustain enjoyment. Joanna Bourke adopts another view, arguing that ordinary men and women, freed from conventional constraints on social behaviour, find intense pleasure in the act of killing. She asserts that the existence of a state of war legitimises killing, unleashing a primal, even erotic joy in the killing act.

Reader in History at Birkbeck College, University of London, Joanna Bourke is a cultural historian with a particular interest in gender issues. Winner of the Fraenkel Prize in Contemporary History for this book, she writes about men in combat as an outsider looking in – for the most part, a very comfortable position to adopt.

Based on accounts of the experiences of Australian, British and US Servicemen during the two world wars and the Vietnam War, this book has already received wide publicity and an extremely positive reception in some circles. Professor Richard Overy, the respected British historian, has called it an 'extraordinary tour de force' and the product of 'massive scholarship'. This book is released at a time when we witness, once again, man's potential for barbarism in the killing fields of Kosovo – the author claims a time 'to put killing back in military history', suggesting that excitement, joy and satisfaction in slaughter are every society's dirty secret.

Undeniably, this is a challenging and shocking work, drawing on an extensive selection of battlefield stories, most of which revel in carnage. As Bourke warns, the subject matter is traumatising – it is hard not to feel soiled by some of the accounts.

History of this type has a heavy responsibility for exposing fundamental aspects of the human condition. Given that duty, it is troubling that this is an incomplete, one-eyed work. It is also badly edited, with a number of incorrect phrases and spelling errors displaying unfamiliarity with the basic subject matter. Utilising a highly selective approach to her sources, Bourke falls back on tired stereotypes of the soldier as a blood-thirsty murderer and attempts to make every killing in war an atrocity. While the traumatic experience of researching the book was almost 'unbearable' for the author, she allows no such luxury to her subjects. Her 'ordinary killers' are little affected by the act of killing and re-absorb into society with few psychological scars – apparently the burden of killing is a relatively light one.

Usually, a historian claiming to challenge an established view considers how other authorities have dealt with the subject. Bourke virtually ignores inconvenient and contradictory arguments and constructs her own discourse in a vacuum. Professor Dave Grossman's classic 1995 Pulitzer Prize-nominated study, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, does not rate a mention. Neither is John Keegan's work on the nature of battle considered, and Richard Holmes's groundbreaking work is only mentioned in passing.

The failure to consider contemporary psychological literature makes this a curious work of history. Bourke furthers her arguments with blithe assertions while neglecting more empirically based studies. Using the substantial historical material available, Grossman made a case that the modern western soldier has been conditioned to become a more effective killer than at any time in history. That this has come at substantial individual and social psychological cost has been borne out by the dramatic increase in post-traumatic stress casualties in the age of industrial warfare. Bourke, on the other hand, appears to construct an artificial moral universe in which the combatant as killer and the combatant as victim can be easily distinguished. As a result, the context in which she constructs her narratives seems far removed from the reality of war.

Rather than presenting battle as the chaotic mess we know it to be, Bourke concentrates on the act of killing. Without the distraction of actual circumstances, the reader is presented with successive one-dimensional renderings of battle as a series of similar encounters. Though admitting that face-to-face fighting is now relatively rare, Bourke allows it to form the basis for her analysis of men in combat. Even then, she appears unaware that such encounters occur between exhausted, terrified, hungry, filthy and often physically sick individuals immersed in the carnage of the direct-fire battlefield. This is not the realm of eroticism: this is closer to hell.

Most damning from the historical perspective is Bourke's failure to discriminate between first-hand accounts, literary sources and anti-war polemics. She invokes sources as disparate as fiction, drama and 'letters from the front'. Much of it falls into the category of what Richard Holmes calls 'military pornography' – the sort of literature that is lapped up by a public eager for titillation and violence by proxy. As Dr Michael Evans argued at the recent Canberra conference on The Human Face of Warfare, 'the paradox of those doing the fighting but not doing the writing has meant that the soldier's war has been a secret war'. To understand this hidden aspect of military history, the author needs to make more informed judgments about the evidentiary value of different types of narratives.

Greater familiarity with the secondary literature might have helped. Robin Gerster's *Big-Noting* established 'porkies' as a constant theme in war memoirs and Michael Herr, author of *Despatches*, commented that after battle one is perfectly free to 'make up any kind of bullshit'. Bourke fails to take the braggart factor into account and invests too much value in the foolish, puffed-up letters of inexperienced young men to their girlfriends and families. Similarly, the scar that Vietnam left on the American psyche produced some ugly literary and cinematic excrescences, but they too need to be seen in context and not viewed as historical reality.

Those familiar with war literature will question the way the historian's craft is manipulated. Sam Damon, hero of Anton Myrer's anti-militarist novel *Once an Eagle*, is quoted as a living character. To add insult to injury, the 'quote' reflects an attitude quite out of character with his (fictional) persona. In a similar vein, Gary McKay, author of *In Good Company*, is depicted as being disappointed and morose that his first kill in Vietnam did not live up to the movies. Reading his graphic and honest account of the event, McKay does not appear to demonstrate those sentiments – instead he is awed and almost transfixed – until further shooting forces him to concentrate on the command of his platoon.

From my experience of teaching military history, I am sure that this book will get a great deal of mileage in some university courses. It purports to show soldiers, and the society that produces them, as enthusiastic killers. The fact that Australian, British and US troops are targeted relieves the reader from the uncomfortable problem of considering moral and cultural relativities. Bourke's argument is also terribly one-sided – if our own boys are capable of such atrocities, then perhaps the SS, the Japanese Army and the Serbian militias are just another aspect of the same problem. The idea that different cultures and different eras truly do possess widely varied attitudes to killing is not recognised – nor do we see the ordinary men who live amongst us still haunted by the memories of what we once asked them to do.

Clearly we all approach events with a different perspective, and the military historian has a particular problem recreating the extreme emotions experienced in battle. Battlefield narratives can be constructed from any number of sources, but will they be accurate? The reader might take heed of General Sir Ian Hamilton's warning: 'On the actual day of the battle naked truths may be picked up for the asking: by the following morning they have already begun to get into their uniforms'. ∞



**MATES & MUCHACHOS: UNIT COHESION IN THE FALKLANDS
MALVINAS WAR**

BY NORA KINZER STEWART,

BRASSEY'S (USA), VIRGINIA, 1991, 192 PAGES.

GATES OF FIRE

BY STEVEN PRESSFIELD,

DOUBLEDAY, LONDON, 1998, 382 PAGES.

A REVIEW BY MAJOR R. PARKIN

R. Parkin reviews two books that observe the human factor in war—unit cohesion.

General George Patton observed that, although wars were fought with weapons, they were won by men. The two books reviewed endorse Patton's intuition that the human spirit is the key factor in warfare.

Nora Kinzer Stewart's *Mates & Muchachos* is a comparative analysis of unit cohesion in the Falklands War. This highly readable book is in the tradition of Ardant du Picq's *Battle Studies* (1880); S.L.A. Marshall's controversial work *Men against Fire* (1974); and the more recent *Firing Line* (1985) by Richard Holmes. Stewart is an American social scientist who examines the issues of military cohesion with academic rigor but without a plethora of jargon. The aim of the book was to see what lessons, if any, the US Army could derive from the war in the South Atlantic. In eight chapters, Stewart examines the combat effectiveness of the Argentine and British forces during the Falklands War, based on her research of the available literature, as well as interviews with officers and men from both sides.

Considering such diverse aspects as historical tradition, culture and organisational structures, Stewart explores how these were translated into battlefield performance. Her own opinion is that her findings were 'unremarkable' — a fact underlined by the title of her ninth and concluding chapter, 'Old Lessons Relearned'. Under headings, such as societal attitudes, open organisational climate, time factor, competence and the soldier, Stewart summarises the findings of her research. Societal attitudes highlighted the lesson that, without the support of the society it is drawn from, an army will be demoralised and not perform effectively. An open organisational climate was associated with such positive qualities as teamwork, trust, respect and friendship, high morale, cohesion and competence. Interestingly, Stewart states that such qualities should not be glibly seen as being exclusive to democratic societies. She points out that military organisations such as the World War II Wehrmacht and the North Vietnamese Army demonstrated aspects of openness in combat, allowing criticism and calling for suggestions. However, she makes clear that such qualities take time to develop and most frequently grow out of strong military traditions, such as the British regimental system. Time is also a factor in developing the competence of a force. Battlefield competence results only from thorough and arduous peacetime training. With regard to soldiers, Stewart's final point, which runs throughout the book, is that 'the single most important element in developing bonds between and among ranks is caring, nurturing officers and NCOs'. Although these lessons may seem unremarkable, they are nonetheless worthy of restatement at a time when technology and management theory have overshadowed such simple truths.

Steven Pressfield's novel *Gates of Fire* records the stand of the Spartan King Leonidas and his three hundred warriors at Thermopylae in 480 BC. The battle at Thermopylae forms the climax of the novel. Indeed, Pressfield's depiction of the intimate ferocity of battle in the age of edged weapons is one of the novel's outstanding features. However, the great strength of this novel is its characterisation. Through the intertwined lives of seven main characters, Pressfield gives a detailed account of Spartan society and offers some insight into the motivation of the men who held the Persians at Thermopylae for six days.

Many of the same themes raised by Stewart are also present in *Gates of Fire*. On the eve of the great battle, a minor character reflects on what gives the Spartans the ability to continue fighting, even though they know what the outcome of the battle will be. He concludes that the real 'glue' of the Spartan phalanx was not the endless drills and exercises they subjected themselves to between the ages of sixteen and sixty. The cohesion of the phalanx was created: When a warrior fights not for himself, but for his brothers, when his most passionately sought goal is neither glory nor his own life's preservation, but to spend his substance for them, then his heart truly has achieved contempt for death, and with that he transcends himself and his actions touch on the sublime.

It may seem trite, but our military tradition calls this 'glue' mateship. Though the word has recently been ridiculed in another context, the mateship that grows from long association, friendship and trust has always been at the core of successful military organisations. These two books corroborate Patton's observation and can be read with both enjoyment and profit. ☼

