



# Army

## Australian Army Journal

Autumn edition 2019  
Volume XV, Number 1

*Serving our Nation*



**Army**

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## Editorial

The Australian Army Research Centre (AARC) strives to challenge the present and debate the future. In this edition of the Australian Army Journal we are pleased to feature a collection of articles which challenge the present by identifying problems from a variety of perspectives and offer innovative solutions. The topics cover a broad spectrum of Army capabilities from people, organisation and doctrine to training, command and support. These are the components of land power to which every Army member can contribute and which deserve continual inquiry and debate. However, it is important that we do more than challenge the present. These articles also debate the future by representing the ideas within Army's Futures Statement *Accelerated Warfare*, which is characterised by the complexity of multi-domain environments, emerging technology and adaptability.

No more clearly are these ideas seen than in our leading article by Dr Charles Knight. The author, a veteran of both British and Omani armies, questions Army's readiness for urban operations and discusses the moral challenge of civilian casualties in a media-dominated battle space. Dr Knight offers the reader a series of questions to prompt further thinking on the subject and invites contributions for a future urban operations themed publication. As a fitting segue, Captain James Lewis presents an analysis of urban operations in the southern Philippines city of Marawi, highlighting the need for Army to develop individual skills and focus on small, agile combined armed teams if it intends to fight the intense and chaotic battles of the urban environment.

In the next two articles, Lieutenant Colonel Kane Wright and Colonel Richard Barrett explore the efficiency of innovation in the modernisation process.

Lieutenant Colonel Wright examines the financial challenges of sustaining a technically aspirant force, and Colonel Barrett proposes a new activity which brings together industry developers and soldiers in a collaborative exercise, developing and testing equipment with immediate feedback to the designers.

Addressing the capability elements of people, organisation and command, Dr Jason Mazanov offers an engaging study on the ways we respond to a workforce that has experienced toxic leadership. Dr Mazanov, an organisational behavioural psychologist, applies the methodology of business ethics to propose policy frameworks that can anticipate and treat the legacy of damaging leadership experiences in Defence. Contributing to the area of doctrine and training, Lieutenant Colonel Jim Sinclair introduces the reader to Army's newest OPFOR construction—the Decisive Action Training Environment, known as DATE. Contextualised against a comprehensive review of Army training adversary doctrine since 1948, the author positions DATE as a sophisticated construct which can be continuously updated to reflect real-world operations.

The last two articles concern the essential support of transport but on very different scales. Captain James Barrett proposes that the challenge of patrolling in harsh environments be met by a reintroduction of camel transportation for Regional Force Surveillance Units, Special Forces and international commitments. Lastly, we feature a group of researchers—Flight Lieutenant Kirsty Wright, Commander Mark Page, Jasmine Connell and Janet Chaseling—who were recipients of the Army Research Scheme grants program and whose report evaluates new methods of transporting and preserving samples of DNA used to identify military casualties.

In this edition, we also present six book reviews on topics that range from leadership to the social history and human geography of armies, including accounts of Australian military involvement in France in World War I and Papua New Guinea in the 1950s and 1960s. Finally, we would like to congratulate Major Andrew Maher on winning the 2018 Chauvel Essay Prize for his article 'The Middle Eastern Advisory Competition: The Islamic Revolutionary Guards Corps Quds Force', which appeared in the *Australian Army Journal*, Volume XIV, Number 1.

As the AARC expands its engagement with the research community, the *Australian Army Journal* continues to play an important role in both representing Army members and communicating Army ideas to the world. I am continually encouraged by the breadth of interest in Army publications and I commend this edition of the *Australian Army Journal* to you.





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# **Urban Warfare Capability: A Background to the Challenges and a Call for Professional Debate**

**Dr Charles Knight**

## **Abstract**

This article invites readers to contribute to a professional debate about the capability required for urban operations: does Australia have it—and does Australia need it? In exploring what that might mean, it starts from an accepted position that urban operations are increasingly likely. It examines in some detail the nature of the limitations imposed on military operations by urban terrain, which is particularly important in understanding the dependence on the use of firepower to conduct offensive operations. A historical discussion about changing attitudes towards civilian casualties helps to explain why urban operations may be increasingly challenging. It may also provide some background for discussion of the puzzling question of why armies have consistently failed to prepare for urban warfare and are remarkably quick to neglect past lessons. These themes are then brought together to argue that the challenges of such operations, especially the moral challenges posed by civilian casualties, represent both vulnerability and opportunity for Western militaries generally and Australia in particular.

## Introduction

Contemporary Western armies are capable of operating in urban areas, but few have fielded capabilities *for* urban combat, except within their Special Forces. This is perplexing. Fighting amongst populations and structures presents well-documented, discrete military and political challenges. Demographic, social and rapid technical changes are increasing both the likelihood of urban combat and the severity of these challenges, not least of which is political sensitivity to suffering own and inflicting civilian casualties. Ugly outcomes are foreseeable. Yet most Western armies have not acquired specialist capability tools to address these challenges. If tasked to dislodge a committed urban defender, they have no choice other than the historical default: firepower and substantial dismounted numbers.

This also applies to the Australian Army. If called upon to deploy, it has only modest infantry numbers and is likely to be constrained by casualty sensitivity. Given these constraints, can the Army offer government politically palatable options in urban scenarios, and how much does this impact on land forces' relevance to regional missions?

Capability that mitigates the political and military risk of urban operations exists. Proven tools include highly protected engineering platforms, special breaching munitions, screening and obscurant methods and tele-operated breaching and reconnaissance systems. Artificial intelligence (AI) and robotics are enabling increasingly agile and durable ground platforms that reduce risk to humans still further. Arming such platforms would accelerate this. Effective domination of a significant urban area using tele-operated platforms and deploying only a few soldiers is now technically feasible. Such capability would not only address the urban vulnerability of the current force but also might represent a valuable niche asset to be deployed in a coalition context.

Does the Australian Army need 'specialised' capability *for* urban combat— noting that the specifications for new procurement projects such the Land 400 Infantry Fighting Vehicle address operating in urban terrain? If it does need such capability, what are the technologies and methods that will deliver it? The first question is a matter of resourcing priorities. It may be argued that the Army has never yet been required to conduct major conventional urban operations and may be able to continue to continue to avoid them;

if not, it is sufficiently adaptable. Conversely, it may be suggested that an Army that has the limitation of small size and modest capacity to replace casualties, combined with the constraint of likely sensitivity to civilian casualties, may be particularly challenged by urban operations—which could increase the likelihood of such a fight. The second question is a matter of deciding which are the high-payoff tools, how best to use them and whether such capabilities should be integral to formations or a ‘bolt on’.

This article provides context to consider these questions. It notes consensus on the likelihood of urban warfare and describes the key challenges common to Western armies. The often-overlooked background to historical avoidance of cities is highlighted and related to the puzzle of neglect. Finally, particular issues for Australia are identified. This paper does not propose solutions or offer analysis of the historical events it uses to illustrate.



*Iraqi Army soldiers from the Counter Terrorism Service conduct urban warfare training under the Special Operations Task Group’s mission to train, advise and enable the Iraqi Counter Terrorism Service in their defeat of Daesh. Image courtesy Department of Defence*

## Challenges for All Militaries

Urban operations are both a daunting and a looming challenge, and not just for armies. Over a decade ago Hills<sup>1</sup> warned of the acute dilemma they present to liberal societies. Even then, the likelihood of urban operations was accepted in both Australian Army doctrine<sup>2</sup> and operating concepts<sup>3</sup> which argued that the key fights of the future will be on humanly, informationally and physically complex terrain. The probability and difficulty of such events has been increased by the acceleration of four global megatrends: population growth, accelerating urbanisation, littoralisation (human clustering on coastlines) and increased connectedness through information technology (IT). This is reflected in both Western militaries' recognition of an 'urban imperative'<sup>4</sup> and the report *When War Moves to Cities: Protection of Civilians in Urban Areas* by the International Committee of the Red Cross.<sup>5</sup> For example, in 2008, 10 men paralysed Mumbai for four days; and, in 2017, Mosul and Marawi resisted clearance for months and weeks respectively. Such battles are but an illustration of this trend and the compounding challenge of unprecedented global visibility.

Technology has changed and continues to change the conduct of war, especially war amongst populations. New media, smartphones, head cams, the Global Positioning System (GPS), small drones and other tools present an uncontrolled and often real-time picture of the battlefield.<sup>6</sup> The visibility of civilian casualties has geopolitical impact and obliges political leaders to give direction to tactical commanders. Concurrently, military technology has pushed conflict into cities, as adversaries seek concealment and protection from surveillance and precision targeting.

In the past, walls and roofs of buildings offered concealment from the naked eye. Now they also conceal combatants from electromagnetic sensors. Electromagnetic sensors, particularly when overhead, allow a technologically capable superior force to dominate open terrain. Indeed, Australian forces might choose urban areas for concealment against a peer military. Certainly, urban areas may be the only place Australia's contemporary asymmetric adversaries can hide. When this advantage is combined with the firepower-inhibiting presence of civilians, the attraction of urban areas is compelling.<sup>7</sup> To this is added the prospect of fighting on more even terms.

Since ancient times, the physical and structural constraints in cities have reduced attacker advantages provided by numbers, better weapons and discipline. The environment gives a defender opportunities to fight on their own terms—it obstructs the massing of forces and force while it separates and exposes the troops. During the siege and assault of Jerusalem in 60 CE the Roman soldiers were constantly ambushed by the Jewish defenders within the buildings and on the narrow streets. Split into small groups and unable to form the stabbing shield-wall that was irresistible on open terrain, the legionaries were frequently repulsed.<sup>8</sup>

Two thousand years later, the problem remains. Units are channelled and separated by the buildings along their axis of advance, limiting their communication. Moving on the street, soldiers are starkly exposed while enemies lying in wait may be well protected behind hard cover. Entire sub-units may be enfiladed by fire sweeping from ahead or behind. There is a constant threat of ambush from defiladed positions in buildings to the flanks or from cross-streets selected so that only the victims in the killing zone can see the firers, who are thus relatively safe from reprisal. If soldiers seek shelter in and amongst buildings, their movement slows almost to a standstill as they seek routes through rooms and spaces where an untrained defender with basic weapons can ambush, at short range, the best-armed warrior.

The urban fight typically develops into a series of sub-battles by groups unable to properly support each other. The buildings, walls, floors and ceilings of an urban area form a cellular matrix that separates a soldier fighting in a room from the support of mates outside the room—and those soldiers in the building from others beyond. As a result, the effective combat power of a force, especially of its small arms fire, is greatly diluted when compared with open terrain.

There are many factors that determine the outcome of firefights, but Lanchester's square law<sup>9</sup> helps to explain what simulation and history shows. In any close assault, provided the number of attackers who are engaging the defenders significantly exceeds that of the latter, suppressive fire superiority and attacker victory with limited casualties is likely. This ascendancy is usual in a rural attack with a bigger force. However, when attackers are moving amongst buildings, often only a few can see and engage any given target: total suppressive fire is reduced. Furthermore, unlike on open terrain, where the suppressive effects of small arms fire



*An Australian Army officer instructs Iraqi Army soldiers during urban warfare training at the Taji Military Complex in Iraq. Image courtesy Department of Defence*

extends in a ‘beaten area’ all around a target, the effects are often localised and do not penetrate within buildings. A handful of assaulters moving within a building may effectively be fighting alone and constantly risking exposing themselves to defenders waiting in cover.

This solution is known: prophylactic use of high explosives. During World War II, every army learned whenever possible to precede the attack on a building by using tanks, artillery or any other explosive firing or flame weapon. Entry was preferably achieved from an unexpected direction by a sapper blowing a hole in an interior wall. Once into the building, the vital tool was the grenade. One Soviet source recommended assaulting with 20 grenades and yet only one spare magazine for the submachine gun. A grenade or two would precede entry to each doorway or room. The prophylactic technique works. It enables steady progress and minimises own casualties. The problem today is that collateral damage considerations may prohibit its use.

Urban clearance consumes resources—especially time, ammunition and personnel. It takes many soldiers a long time to clear room by room, building

by building and block by block. Not only do they get tired and need to be rotated; they will also suffer casualties. Furthermore, when fighting a determined defender, an attacker cannot advance and disregard the risk of ambush from the flanks and above or infiltration that cuts off the rear. The environment demands not just systematic clearance and checking of all the rooms and spaces of buildings in an area of operation but also systematic deployment of defenders to protect the flanks and lines of communication. This can rapidly require more soldiers than the assault force itself.

The slow, expensive nature of the urban fight has not changed, but there is a new constraint. Armies of the past were much bigger. Most Western armies now plan to fight with brigade-sized task forces. While these have far more firepower and better target detection and communication systems than their predecessors, they have fewer soldiers. If such a force were to fight in a city using historical methods, they could only clear and hold modest sectors—perhaps an area 700 metres wide by two kilometres deep.<sup>10</sup> It is unclear how a modern brigade would deal with a determined adversary in anything larger than an Australian country town: the resources are not there.

The most pressing challenge faced by Western militaries in populated urban areas is moral. This arises first from the inevitability of civilian casualties and then from Brown's 'US casualties versus collateral damage dilemma'.<sup>11</sup> Measures to reduce own casualties, especially the use of explosive firepower, increase non-combatant casualties. New media technologies now reveal this consequence to the world in unprecedented, awful detail.

The risks that these challenges present to Army appear severe. Risk management frameworks suggest treatment by acceptance, transfer, avoidance or reduction. Army needs to acknowledge that, while the strategy of 'avoidance' of urban fighting has an appealing logic, it is directly associated with a readiness to harm civilians when it fails.

## **The Rationality of Sanction and Acceptance of Civilian Casualties**

Armies have always fought *for* cities and the communication networks and resources that they control, yet they have always sought to avoid the challenges of fighting *in* them. In 557 CE Sun Tzu counselled that attacking cities was the 'worst possible policy'. He warned that the engineering to



breach a city's defences might take six months and a rash assault could cost a third of an army. Like later writers, he also recommended that battles be away from cities.<sup>12</sup> Historically, the military difficulty of urban fighting, the possible casualties amongst attackers, and the risk of destruction of the economic resource that a city and its inhabitants represented combined to motivate avoidance, creating social norms that eschewed fighting in cities. The norms were enforced by the brutal utilitarian rationale of placing a terrible price on urban resistance.

If a city's defenders refused to submit and the besieger eventually assaulted, they could expect what the Old Testament says the Israelites did to Jericho when the walls fell: 'destroyed with the sword every living thing in it—men and women, young and old, cattle, sheep and donkeys' (Joshua 6:21). As the Mongol invaders swept across China and Eastern Europe they would spare those who surrendered immediately but none in a city that resisted.<sup>13</sup> In 1209, before the sack of the city of Beziers, the crusader Abbot Amalric infamously advised an attacker 'kill them all, let God sort them out'.<sup>14</sup> The Irish bitterly remember that, after Cromwell's eventual successful assault of Drogheda in 1641, the inhabitants were slaughtered. Yet this was on par with European wars—indeed, the penalty of killing all of a city's defenders if it fell to assault was codified in the laws of war that emerged in the 17th century.<sup>15</sup> The professional armies that developed between 1500 and 1800 to fight for the emerging nation-states of Europe gradually constructed a moral 'convention' of not fighting in populated places<sup>16</sup> that informed current international humanitarian law (IHL).

Contemporary norms place huge emphasis on protecting non-combatants, so it is perhaps ironic that civilian suffering in war is increasing and may be greater than under harsher norms that incentivised avoidance. The phenomenon of increasing collateral damage is further explained in two recent books by Downes<sup>17</sup> and Slim<sup>18</sup> analysing civilian casualties across a wide range of conflicts. Both show that the turn towards destructive violence is a rational decision triggered by a desire to win and reduce own casualties. This effect is particularly acute in urban combat, with subsequent studies echoing Brown's work<sup>19</sup> showing that, as the fight protracts, armies accept heavier civilian casualties. This intuitive finding appears true across very different armies, both those who disregard IHL and those who strive to follow it. On the one extreme, the Russians invading Chechnya in 1995 quickly abandoned initial reticence to demonstrate not merely a very

high tolerance of collateral damage but a willingness to coercively target civilians.<sup>20</sup> On the other, Kahl's analysis<sup>21</sup> suggest that, while US forces in Iraq after 2003 made historically unprecedented efforts to comply with norms of non-combatant immunity, urban fights against serious resistance still required increasing firepower and civilian casualties. This is not to suggest that this shift towards accepting more collateral damage in urban battles contravenes IHL: the concept of proportionality allows for such harm. Rather, the point is that a shift occurs because as an urban fight protracts the judgement of military necessity changes. Unfortunately, this interpretation is increasingly proving to be at odds with global opinion. As the United States (US) Army Chief of Staff, General Milley, suggests, there seems to be increasing political risk in deploying to an urban fight with a force 'designed, manned, trained and equipped to operate primarily in rural areas'.<sup>22</sup>

## **Neglect is a Puzzle**

It is rational for advancing armies to avoid an urban fight and to discourage defenders, but neglecting study of an acute problem that could and did sometimes occur is curious. SLA Marshall observed a 'curious void' in the work of all the great military thinkers.<sup>23</sup> This oversight might be understood in the 19th century, when mass armies could swamp cities. Similarly, that the fighting in the rubble of deserted towns during World War I was not seen as a distinct from trench warfare is understandable. However, continued neglect of the topic by the military long after the decisive bloody battles in cities during World War II is puzzling. It might be explained by the US experience in Vietnam and European domestic politics.

The main role of North Atlantic Treaty Organization (NATO) armies during the Cold War was to prepare to defeat Soviet invasion. Defending in the cities in the middle of Europe would have offered great tactical advantage, but the political imperative was to appear ready to fight the Warsaw Pact in the open countryside at the eastern border. Had the NATO armies been seen to prepare to fight in urban areas, this would have undermined that deterrent posture.<sup>24</sup> In the global context, after defeat in Vietnam, the US military turned away from its experience there, including urban combat, and focused on constructing its preferred vision of 'high-tech' armoured manoeuvre forces.<sup>25</sup> Its NATO allies followed its lead, and the approach appeared to have been vindicated by the decisive coalition victory in Kuwait in 1991.

Whatever the reasons for neglect, Rosenau's analysis<sup>26</sup> showed that, after World War II, Western armies continued to treat urban conflict as an 'aberration' to be avoided rather than studied or prepared for or even learned from. Examples abound. In 1945 the US Army attacked Aschaffenburg with unsupported armour and suffered heavy losses, as did the Soviets who attempted the same in Berlin. Yet the importance of combined arms tactics would continue to be forgotten. In 1973 the Israeli Army lost many armoured vehicles driving unsupported into El Qantara and Suez but still repeated that error in the towns of Lebanon in 1982.<sup>27</sup> Without having developed better tactical solutions, the default position when forced into urban areas was, and remains, firepower at a premium in civilian casualties.

The 1995 Russian assault on Grozny demonstrated a similar pattern. The leaders declared the necessity of capturing the Chechen rebels' capital and a commitment to avoiding civilian casualties, and they promised a quick victory. The army employed tactics adapted from open warfare without much preparation and, initially, using restricted rules of engagement. The Russian Army then suffered very heavy casualties, became trapped and resorted to massive firepower to extract themselves, causing heavy civilian casualties leading to international political fallout.<sup>28</sup>

By 2000 the trends towards urban warfare were widely accepted in allied armies and this was reflected in Australia's doctrine<sup>29</sup> and operating concepts.<sup>30</sup> The need for the future force to be capable of operating and surviving in urban conflict was articulated; however, this did not translate into specialised systems and platforms to deal with urban specific challenges.<sup>31</sup> The exception was the two armies with recent urban war humiliations. The Israeli Army fielded highly protected armoured vehicles,<sup>32</sup> engineering equipment and 'robots' and the Russian Army deployed new vehicles designed to deliver greater suppressive firepower effects in urban areas. In contrast, Western forces, most notably the US Marine Corps, invested effort in training (including a focus on restraint in the presence of civilian populations).<sup>33</sup> Essentially, they were 'doing the same thing better'.

The political and ethical limitations of this approach, and the central importance of media as a player, became evident in Iraq in April 2004. After emotive footage of insurgents desecrating the bodies of four contractors in Fallujah was shown on US media, the White House ordered a US Marine Corps force to attack the city of Fallujah and 'punish the killers'. The

commander, Major General Conway, objected, warning of casualties and political consequences.<sup>34</sup> His repeated warnings were overruled. There followed three days of intense urban fighting with an increasing use of firepower. This was the only option to progress against the Iraqi insurgents and comply with US domestic political demand<sup>35</sup> to advance to 'pacify the city'. Ultimately, media reporting of civilian casualties saw international and Iraqi public anger destabilise the Iraqi government and a halt was ordered before operations were complete.<sup>36</sup> The combination of the civilian bloodshed and factional Iraqi perceptions of heroic and effective resistance catalysed the insurgency that would rage for a decade.<sup>37</sup> The vital message from Fallujah is that a political imperative may override military expertise and caution.

History demonstrates that the low prioritisation of dedicated capability for urban warfare represents significant risk, both political and moral. In some countries there have certainly been changes in tactical training and some system modifications and changed requirements—for example, 360-degree 'urban' protection upgrades for a limited number of US and British tanks. Similar options are envisaged for Australia's new Land 400 vehicles. However, these should still be understood as improving capability to operate in urban areas rather than capability for urban operations: they do not address the underlying 'engineering' challenges of the physical environment and the presence of populations. The exception is within the Special Forces, which have outstanding tactical capabilities for light assault in and around small urban complexes.

## **The Challenge for Australia**

The challenges described apply equally to Australia. No matter how good Army's general-purpose capabilities may be, they do not offer ways to avoid the collateral damage dilemma in urban operations. If the Australian Army is deployed to such operations, the political consequences of Army operations causing extensive casualties may be more of a problem than for allied forces: for Australian forces they would be almost unprecedented.

Urban operations may not be a choice. Australia's alliance strategy with the US depends on it being a reliable and valuable partner. In the last 15 years Australia has been exactly that. However, our excellent reputation in



*Australian Army soldiers fire an 84mm recoilless rifle at the urban operations training facility on the Singleton Army Base. Image courtesy Department of Defence*

the US could readily be lost by refusing a request for help. This plausibly might oblige the Australian Army to contribute ground forces to a US-led intervention involving intense urban operations. In a similar vein, Australia's recent provision of trainers to assist the Philippines military highlights the possibility of urban operations in the region. In either eventuality, specialist urban capability might either reduce the risk of sending conventional infantry or provide a politically attractive and alternative niche contribution.

## Conclusion

Urban areas will be the battle grounds for future wars. The enduring problems of the physical environment will be overlaid by emergent challenges, especially new technologies and the immediate broadcasting of civilian casualties. Australian doctrine and development thinking recognises the need to operate in urban areas and, once planned systems come into service, Australian capability will be comparable with that of peers. However, this is not sufficient. The operational challenges of urban war are acute for any small professional army, and the attendant political and reputational risks of significant own and civilian casualties demand additional dedicated capability. Conversely, capabilities adopted to mitigate these risks might allow Army to offer government options to assist allies and regional partners in a wide range of military and disaster contingencies and thereby enhance Army relevance.

## Addendum: Questions to Prompt Thinking and Papers

This addendum is for readers who want to think further about the challenges of urban operations and seek inspiration for joining the debate. It describes a set of 12 vulnerabilities that exist for urban operations. (Conveniently, the vulnerabilities are clustered into three broad areas: mainly people related, mainly physical terrain related, and mainly limitation-related.) For each vulnerability three questions are posed, prompted by reflection about that ‘problem’. These are merely possible questions to stimulate thinking. You might be interested in addressing one or several of the questions or you may identify another important one that you want to tackle with a paper—you should not constrain your ideas.

### Mainly People Related

- 1 Unstable Constraint on Force** describes the consequences of the legal and moral constraints placed on the use of force in order to protect non-combatants and certain structures. There is a dilemma of balancing risk to own troops against civilian casualties and the prospect of that balance shifting sharply in response to casualty events.

- Do norms of populations remaining in place and restrictive rules of engagement reduce net harm to non-combatants or do they result in higher totals of civilian casualties occurring across protracted battle, although at reduced rates?
- What methods, influences or changes to norms or obligations might we use to separate non-combatants from adversaries?
- In what ways might we enhance, integrate or use existing or new weapon, surveillance and control systems differently in order to better discriminate and engage adversaries amongst civilian populations?

**2 Media Exhibition** describes the vulnerability caused by the conjunction of increasing military importance of public opinion locally, domestically and internationally with an increased presence of and vantage points for media and recording devices.

- In what ways can the information flowing within and out of an area of operations be controlled or influenced?
- How should Army respond to the external media narratives of urban operations?
- Should Army generate its own media narrative and, if so, how?

**3 Logistic and Security Encumbrance** is the legal and humanitarian obligation to provide security and logistic support to populations.

- Can the obligations to provide support plausibly be met by smaller armies in larger urban areas and, if not, how can we reshape the political–legal environment and international expectations?
- What are the military and civilian capabilities required to effectively and efficiently deliver a (presumably substantial) minimum level of logistic support to populations and how might a society best develop these to meet obligations?
- What opportunities do robotics and similar technologies offer to deliver logistic support and achieve security, and to what extent might these offer an opportunity to shape battlefield conditions?

**4 Community Hindrance** is the passive obstruction or active protest and resistance to military manoeuvre by crowds or third parties.

- What technologies will help ascertain the composition, attitudes, locations and likely intentions of populations within areas of operations?
- What is the threshold at which activities in support of violent actors—which might range from obstructive protest to passing operational information—lose the actor non-combatant status and how might they be established?
- What deployable barrier, blocking or deterrent systems might be employed to prevent individuals or groups within populations from compromising operations?

#### **Mainly Physical Terrain Related**

**5 Concealment<sup>38</sup> and Ambiguity** gives the adversary relative freedom of manoeuvre and insulation from effective intelligence, surveillance or reconnaissance adversaries amongst urban structures, infrastructure and population.

- What surveillance methods or technologies reduce urban concealment, and how can they be applied to locate adversaries and deny their freedom of actions?
- Can computer-generated imagery, presented in three dimensions, reduce the problems of spatial understanding, navigation and the coordination of both lethal and nonlethal effects?
- Would the persistent deployment of smaller autonomous or semi-autonomous lethal platforms within the putative concealed spaces of an urban area effectively neutralise its advantages?

**6 Aggravated Exposure** is the dramatically increased exposure to attack throughout an urban area and from vantage points in three dimensions that may be at close range, protected and/or defiladed.

- What obscurant, physical screening or blocking technologies, systems or methods can be used to deny adversaries vision and other sensing capabilities?



- Can a combination of sensing and semi-automated fire control technologies offer overwatch so effective in responding to any enemy fire that it will mitigate the existing vulnerability of troops in open spaces?
- Can tele-operated and autonomous tools and platforms reduce the risks of urban movements?

**7 Diluted Combat Power** is the reduction in the ability to apply force and manoeuvre amongst a matrix of cellular structures because of the channelling and slowing of movement; the isolating and blinding of personnel; the masking and absorbing of weapons effects; and the personnel consumption of clearing and securing.

- What tools and platforms would enable forces to move through the urban fabric without being channelled?
- What tools and technologies might rapidly check and clear the interiors of large numbers of urban structures?
- What weapon systems might deliver scalable lethal and nonlethal effects at precise points deep inside urban structures?

## Mainly Limitations Related

**8 Degraded Technology** is the reduction in the effectiveness of sensors, communications equipment and advanced weapons because of physical obstruction and visual obscuration as well as electromagnetic spectrum effects, including absorption, reflection and noise.

- Which weapons, communications and surveillance technologies might best exploit the characteristics of the urban environment?
- Which technologies, processes and procedures mitigate degradation of existing equipment?
- What combination of technologies will be required to penetrate the urban fabric and visualise the operating picture?

**9 Absent Actor Attack** is the engagement of forces using weapons displaced in time or space from the operator. It may be self-initiated mines or improvised explosive devices (IEDs), or involve increasing degrees of remote control or intelligent autonomy.

- What fleets of systems and platforms will provide the robust capacity for deception and route clearing/proving that will enable force manoeuvre?
- What own methods of operation will reduce the effectiveness of an adversary system that makes extensive use of tele-operated and autonomous weapon systems?
- What active countermeasures might disrupt the command, control and communication (C3) of a system of weapons that have few or no local operators?

**10 Non-Readiness** is the deficiency in equipment, training, regrouping and rehearsal to effectively conduct complex operations.

- How do we shift the Army towards not just psychological preparedness for urban operations but also an environment where a technocratic innovative force might dominate?
- Where should the focus on delivering new urban capability be: long lead-time systems, critical/high-payoff systems or maximum distribution?
- To what extent can simulation, modelling and gaming of urban operations deliver deep understanding and enhance capability?

**11 Overload Scope** is the potential for induced error where the military C3 system is temporarily overwhelmed by the tempo, density and diversity of urban events, compounded by political interference and the psychological difficulty of switching between combat and benign tasks.

- What additional or increased C3 functions are required in the urban battlespace?
- Can the functions of C3 be differently delivered for urban combat? Which functions must be physically present and which might be delivered remotely?
- How can new technologies be managed to both provide improved visualisation at manageable cognitive load?

**12 Philosophic Dissonance** is an intellectual shortfall with three elements: the dissonance between the primordial demands of urban combat operations and the expectations of liberal societies; the dissonance between military focus on tactical methods and outcomes while

adversaries target strategic perceptions; and the dissonance between contemporary acknowledgement of the need for urban operations and the cultural change and investment needed to be able to prevail there.

- How can the military legitimately shape public and political expectations of urban combat?
- How do we develop and diffuse a strategic perspective of urban operations?
- What command and control structural enhancements would better manage the political and informational challenges of an urban battle?

**Editor's Note:** The Australian Army Research Centre seeks to start a debate about the need for greater capability for urban operations. We seek papers for both this journal and the blog spot. Contributors might focus on whether there is a need for greater capability—the importance of urban operations relative to other tasks—or, alternatively, what such capability might be. Responses might address known problems such as protecting dismounted urban movement or reducing civilian casualties; or they might consider new concepts for the fight itself. Furthermore, we are very interested in receiving 'futures' papers that pose urban scenarios and explore 'unknown unknowns'. This paper provides a conceptual starting point for discussion.

## About the Author

Dr Charles Knight researches technologies and methods for operations amongst populations and teaches on the postgraduate terrorism program at Charles Sturt University. Commissioned at Sandhurst, his service with the Royal Air Force, British and Omani Armies and in Asia informed his counterinsurgency PhD. He built simulation and weapons systems, spent a decade in Special Operations development and delivered novel capability and futures analytic methods. For urban operations he wrote doctrine and reformed training, and his Masters research analysed vulnerabilities to asymmetric attacks in cities. A surveillance, collection and analysis practitioner, he has held senior civilian security management positions and continues to serve as a reservist—earlier commanding an infantry battalion.

## Endnotes

- 1 Alice Hills, 2004, *Future War in Cities: Rethinking a Liberal Dilemma*, London: Frank Cass, p 2
- 2 Commonwealth of Australia, 2004, 'LWD 3-9-5 Urban Operations (Restricted)', in *Land Warfare Doctrine*, Puckapunyal: Land Warfare Development Centre, Introduction
- 3 David Kilcullen, 2004, 'Complex Warfighting', in *Future Land Operating Concept*, Canberra: Army Headquarters
- 4 Michael Evans, 2009, 'Lethal Genes: The Urban Military Imperative and Western Strategy in the Early Twenty-First Century', *Journal of Strategic Studies* Vol 32, No 4
- 5 International Committee of the Red Cross, 2017, *Outcome Report: When War Moves to Cities: Protection of Civilians in Urban Areas*, Geneva: International Committee of the Red Cross and InterAction Roundtable
- 6 Mark Corcoran, 2014, 'Drone Journalism: Newsgathering Applications of Unmanned Aerial Vehicles (UAVs) in Covering Conflict, Civil Unrest and Disaster', Adelaide: Flinders University, at: [http://www.flinders.edu.au/ehl/fms/law\\_files/Drone%20Journalism%20During%20Conflict,%20Civil%20Unrest%20and%20Disasters%20March%201%202014.pdf](http://www.flinders.edu.au/ehl/fms/law_files/Drone%20Journalism%20During%20Conflict,%20Civil%20Unrest%20and%20Disasters%20March%201%202014.pdf)
- 7 Sean A J Edwards, 2000, *Mars Unmasked: The Changing Face of Urban Operations*, Santa Monica: Rand Arroyo Center, Vol 2, No 3
- 8 Flavius Josephus, 1987, *The Works of Josephus: Complete and Unabridged*, Peabody, Mass.: Hendrickson Publishers, book IV, chap I, para 4
- 9 When two similar forces are fighting on open terrain with projectile firing weapons, the advantage of the bigger side is the difference between the square of the numbers in each force. Thus a three-to-one numerical advantage is actually a nine-to-one combat exchange advantage. See Dean S Hartley and Robert L Helmbold, 1995, 'Validating Lanchester's Square Law and Other Attrition Models', *Naval Research Logistics (NRL)* Vol 42, No 4, p 135
- 10 This estimate is based on US doctrine. Imagine that such a brigade is tasked to assault and clear into an urban area and that it has three infantry battalions with four rifle companies each. The requirement to secure the starting area and flanks and have a reserve means it can probably only attack with two of these battalions. Therefore, the widest probable advance would be 'four companies up with four back' across a four-block frontage (maybe 700 metres wide). Assume the third battalion is employed to secure both flanks as the battalion advances. In an urban area it can defend a frontage of up to about eight blocks (around 1.4 kilometres), so assuming that flank protection can be done with a somewhat more spread-out force—say twice that—the flank protection battalion will run out of soldiers on both flanks after advancing somewhere between 1.5 and 2 kilometres. Note that Australian brigades typically only have two infantry battalions and three infantry companies.
- 11 KW Brown, 1997, 'The Urban Warfare Dilemma—US Casualties Versus Collateral Damage', *Marine Corps Gazette*, Jan
- 12 Sun Tzu, *The Art of War*, 1963, Samuel Griffith, trans, Oxford: Clarendon Press, chap 3, para 3
- 13 David Morgan, 1986, *The Mongols*, Oxford: Blackwell, p 82
- 14 Césaire de Heisterbach, 1851, *Dialogus Miraculorum*, Joseph Strange, ed Coloniae: Sumptibus JM Heberle, p 302

- 15 Geoffrey Parker, 2002, 'The Etiquette of Atrocity: The Laws of War in Early Modern Europe' in Geoffrey Parker, *Empire, War and Faith in Early Modern Europe*, London: Penguin, pp 147-48
- 16 Gregory J Ashworth, 1991, *War and the City*, London: Routledge, p 112
- 17 Alexander B Downes, 2008, *Targeting Civilians in War*, Ithaca: Cornell University Press, p 121
- 18 Hugo Slim, 2010, *Killing Civilians: Method, Madness and Morality in War*, London: Hurst Publishers Ltd, p 197
- 19 Brown, 1997
- 20 Jason Lyall, 2009, 'Does Indiscriminate Violence Incite Insurgent Attacks?: Evidence from Chechnya', *Journal of Conflict Resolution* Vol 53, No. 3, p 331
- 21 Colin H Kahl, 2007, 'In the Crossfire or the Crosshairs? Norms, Civilian Casualties, and US Conduct in Iraq', *International Security* Vol 32, No 1, pp 31–32
- 22 Michelle Tan, 2016, 'Army Chief: Soldiers Must Be Ready to Fight in "Megacities"', *Army Times*, 5 Oct
- 23 SLA Marshall, 1973, 'Notes on Urban Warfare', Special Publication No 6, Maryland: Army Materiel Systems Analysis Agency, p 3
- 24 Paul Bracken, 1976, 'Urban Sprawl and NATO Defence', *Survival* Vol 18, No 6, p 254
- 25 Lawrence Freedman, 2017, *The Future of War: A History*, UK: Penguin, p 190
- 26 William G Rosenau, 1997, "'Every Room Is a New Battle": The Lessons of Modern Urban Warfare', *Studies in Conflict & Terrorism*, Vol 20, No 4, pp 72-85
- 27 Yezid Sayigh, 1983, 'Israel's Military Performance in Lebanon, June 1982', *Journal of Palestine Studies* Vol 13, No 1, pp 46, 61
- 28 Michael W Kelly, 2000, *Grozny & the Third Block (Lessons Learned from Grozny and Their Application to Marine Corps' MOUT Training)* Monterey: Naval Postgraduate School, p 44
- 29 Australia, 2004, Introduction
- 30 Kilcullen, 2004
- 31 Michael Peck, 2005, 'Army Developed Urban Tactics, but Lacked Doctrine', *National Defense Magazine*, 7 Jan
- 32 Nathan L Sayers, 2006, 'Future Combat Vehicle Systems: Lessons from Operation Defensive Shield', in *DSTO-GD-0484*, ,Edinburgh SA: Defence Science and Technology Organisation
- 33 USMC Warfighting Laboratory, 2000, *Basic Urban Skills Training Package*, Quantico, Virginia: Marine Corps Warfighting Laboratory
- 34 Rajiv Chandrasekaran, 2004, 'Key General Criticizes April Attack in Fallujah', *Washington Post*, 13 Sep
- 35 David Walsh, 2004, 'US Media Applauds Destruction of Fallujah', World Socialist Web Site, 17 Nov, at: <http://www.wsws.org/en/articles/2004/11/fall-n17.html>

- 36 Carter Malkasian, 2006, 'Signaling Resolve, Democratization, and the First Battle of Fallujah', *Journal of Strategic Studies* Vol 29, No 3
- 37 Oxford Research Group, 2005, *Learning from Fallujah: Lessons Identified 2003–2005*  
Oxford: Oxford Research Group / Peace Direct
- 38 'Concealment' is used here in the military sense of hiding but without the inference of physical protection that the word 'cover' has.



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# **The Battle of Marawi: Lessons for Developing Urban Capabilities**

**Captain James Lewis**

## **Abstract**

In May 2017, Islamist insurgents laid siege to the city of Marawi in the Mindanao region of southern Philippines. This siege led to a five-month campaign by the Armed Forces of the Philippines (AFP) to retake Marawi and restore order to the region. The experiences of the AFP have broad relevance to the Australian Army across a number of corps and disciplines, including close combat, offensive support, mobility and survivability, urban sniping and counter-sniping, and logistics. The aim of this article is to describe the key tactical lessons the Australian Army can learn from the AFP's urban clearance of Marawi. Consideration of these lessons may inform, and improve, the Australian Army's current approaches to force generation of close combat, combined-arms capabilities.

## **Introduction**

In May 2017, Islamist insurgents swarmed through Marawi in the southern Philippines, attempting to take the population of 200,000 hostage and announcing it as a new 'Capitol' for Islamic State (IS) in South-East Asia. This wildly ambitious, unprecedented move triggered a state of martial law,



and from May to October 2017, fighting echelons of the AFP deployed to Marawi. The southern Philippines has proven to be a haven for Islamist terrorists for many years;<sup>1</sup> however, anecdotal evidence suggests the region has also seen a recent increase in activity due to an influx of foreign terrorist fighters from the Middle East.

Prior to Marawi, the AFP had limited experience in urban combat, with their training historically focusing on ongoing jungle operations to suppress various Islamist groups and the New People's Army (NPA)—a rebel communist group. As a result, with almost no notice, the soldiers, marines, sailors and airmen and women of the AFP were required to adapt to this new environment extraordinarily quickly.<sup>2</sup> The lessons learned by the AFP from grinding combat in a large, broken, crowded city are important. The Australian Army has been investing in developing leading training to improve its skills for combat operations in the urban environment, but it must learn everything it can from the AFP's vicious Marawi experience to ensure it is best prepared to operate, fight and win in similar urban conflicts.



*A Philippine Army soldier provides security during urban combat training with Australian Army soldiers from the 3rd Brigade at Capinpin, Philippines as part of Operation AUGURY. Image courtesy Department of Defence*

The aim of this article is to describe the key tactical lessons the Australian Army can learn from the urban clearance of Marawi. Consideration of these lessons may inform and improve the Australian Army's current approaches to force generation of close combat, combined-arms capabilities.

Accordingly, this article will describe the Battle of Marawi. Subsequently, it will identify the key lessons learned by the AFP in fighting an intelligent, determined, disciplined and well-equipped terrorist threat in the extraordinarily difficult, intense and complicated urban environment. Finally, this article will identify how these lessons could inform or improve the Australian Army's current approach to generating a close combat and combined-arms edge over potential adversaries. These lessons are drawn from a wide range of sources, including members of an Australian Mentoring and Training Team (MTT), the Philippines Joint Special Operations Group (JSOG), the Light Reaction Regiment (LRR) and the Marine Special Operations Group (MARSOG).

## **Marawi: A Vicious Urban Battle**

On 23 May 2017, security forces from the Philippines conducted a raid in Marawi to capture an insurgent named Isnilon Hapilon—the former leader of the Abu Sayyaf Group (ASG) and self-proclaimed Emir of IS in East Asia. The forces that conducted the raid reported much tougher resistance than expected. The insurgents were rapidly reinforced and quickly revealed extensive defensive preparations throughout the city—concealed routes, hidden ammunition and arms caches and an almost doctrinal urban defensive plan. The raid was repulsed, and by the end of the day the so-called Islamic State in the Philippines (IS-P) had triggered their long-laid plans to dominate the city.

Martial law was declared by President Rodrigo Duterte, and a five-month urban campaign to regain the city commenced. The battle was pitched against a well-resourced, sophisticated enemy that had the 'home ground advantage'. Extensive preparations had been conducted throughout the city, and an intense, protracted and close-quarters battle, the likes of which has not been seen in the region in decades, became the only way to destroy the enemy and recapture Marawi.<sup>3</sup> On 23 October, following 153 days of war, this gruelling mission was achieved.

The costs of the Battle of Marawi were high. Opinions on infrastructure damage vary, but aerial imagery indicates that huge swathes of the city have been devastated by the fighting—the mass destruction flattening entire city blocks. The World Bank estimates it may take two decades to restore Marawi to its original condition. However, the true price of the battle is that paid by the people of Marawi and the lives of those fighting in it. 165 members of the AFP were killed in action, with over 1,000 injured. Some reports indicate over 1,000 insurgents were killed in the siege, which is reported to have also taken the lives of 47 civilians. The fighting drove over 400,000 people from their homes.

## The Fundamentals of Close Combat

Fundamentally, the Battle of Marawi was a systematic clearance by individuals and small teams. This was necessary because of the presence of trapped civilians and hostages. While the AFP had access to overwhelming offensive support, armoured fighting vehicles, unmanned aerial surveillance and close air support platforms, these tools alone could not eliminate the terrorists, especially as firepower was restricted to limit civilian casualties and avoid destroying mosques and other key buildings. Despite the great destruction wrought by close air support and indirect fires, the city was not liberated until every building had been deliberately cleared by ‘the man [and teams] on the scene with a gun’.<sup>4</sup> This battle demonstrated that intense close combat remains the only way to achieve decisive urban victory.

Adaptation of jungle combat skills to achieve expertise in combat shooting, battlefield fitness, ingenious improvisation and small team tactics, techniques and procedures (TTPs) were crucial factors in the AFP’s eventual success. Furthermore, the Battle of Marawi demonstrated that it takes a high standard of command, control and communications (C3), combat trauma management and interoperability with supporting arms, such as joint fires and engineers, to fight and win in the urban environment. All this took time to learn and develop. The observations made by the Operation AUGURY Land Mentoring and Training Team (MTT-L) support this. The most regular feedback received after the combat shooting, urban tactics, joint fire, counter improvised explosive device (CIED), urban breaching and combat trauma management training, was that these skills would have allowed the AFP to win more rapidly and with fewer casualties.<sup>5</sup>



*An up-armoured combat engineer bulldozer clears a path through urban debris during the battle for Marawi. Image courtesy Armed Forces of the Philippines*

While the AFP had access to enabling technologies and supporting arms such as indirect fire, close air support and armoured fighting vehicles, the battle was ultimately won by room-to-room, house-to-house fighting. In a fight where minimising civilian casualties and collateral damage is a critical factor, no amount of firepower can substitute for intimate, discriminate, and precise application of force.

Combat shooting, battlefield fitness, small team TTPs and battle craft are vital. Above all else, to prevail in an urban fight in accordance with its core values, the Australian Army must have the ability to deliver small combined-arms teams to the fight that are capable of shooting faster and more accurately than their enemy out to 200 metres by day and by night; can dominate and control complex spaces more rapidly and with fewer casualties; and can operate seamlessly with other small teams or supporting elements in joint and coalition environments. The Marawi experience suggests that such small teams, operating seamlessly alongside engineers, artillery and armour—as well as combat medics and military police—fighting as combined-arms sections, platoons, combat teams and battle groups, are the key to success.

## Owning the Night

Both the AFP and the insurgents had very limited access to night fighting equipment (NFE); indeed, the only forces well equipped with NFE were those from Armed Forces of the Philippines Special Operations Command (AFPSOCOM) and MARSOG. This meant the majority of forces were static at night and would occupy urban defensive positions until dawn. Early warning devices would be improvised by placing tins and cans on lines of string or by shattering fluorescent globes on likely enemy approaches—the clanging of the tins or the crunch of the broken glass would compromise any would-be attacker.

However, Filipino special forces with access to NFE were extremely effective when operating at night. They were able to cross obstacles considered risky during daylight and could conduct assaults on enemy positions to take advantage of the overwhelming overmatch in night fighting ability. They could then path-find for conventional forces, which had little to no NFE, to secure new battle positions. The Australian Army should seek to leverage its significant advantages in night fighting equipment and ability. All elements of the combined-arms team must seek complete fluency in all skill sets between day and night and become comfortable with operating primarily in the dark. In a context similar to Marawi, the ability to dominate the enemy by day and night, and to strike them when they are most vulnerable, could prove decisive. This requires agile and stealthy forces that are comfortable in conditions of significant fatigue. Non-verbal communication by night should be second nature but takes time and practice to master; basic skills such as small team room entry drills or corner-and-partition drills become significantly more complex once combatants cannot rely on peripheral vision. Reverse-cycle operations can and should be the norm,<sup>6</sup> and combined-arms units should seek to train in reverse-cycle conditions as often as practicable. This will require a shake-up of 'traditional' training and barracks training approaches, and commanders will need to adopt much more flexibility around start and finish times during the working day.

Reverse-cycle training can be resource neutral and employed in a standard barracks working week. Training can be in a purpose-built facility or even just in the facilities around barracks. The only requirements are clear, targeted training outcomes (not just training for the sake of being there) and committed, creative leaders.

## Use of Armour

Marawi highlighted the vital importance of having armoured fighting vehicles (AFV) fighting alongside the infantry and engineers in the urban environment. The Marawi experience suggests that, in such a contested, formidable and lethal environment, armour saves lives. Wherever possible, infantry platoons advanced with armour in intimate support, bounding forward to clear the way and allowing the AFV to move forward to a support by fire (SBF) position. Engineers breached with armour in close support wherever possible, and the AFVs were also used to support casualty extraction. Despite the obvious advantage of the mobility, firepower and protection that AFVs afforded the AFP, their mobility limitations became clear: even in undamaged areas, narrow, labyrinthine streets, like those found in most Indo-Pacific cities will pose significant limitations for AFV employment. Particularly given the overwhelming destruction in Marawi, there was limited scope to employ AFV in many areas until bulldozers could clear corridors and fire positions for them. This was typically conducted using a 'leapfrog' technique, which is described below.

Armour supporting infantry is highly desirable in the urban environment, but its limitations must be considered and significant interoperability training must occur beforehand. The time it takes to refine TTPs and develop the trust and understanding required to fight in combined-arms teams means that infantry and armour should train together in this environment regularly. Furthermore, AFV will be unable to access key areas in the urban environment without access to bulldozers or other mobility support. Urban mobility training for armour and engineers should also be prioritised.

## Command and Control

Due to difficulty in coordination and inexperience in orchestrating effects in the urban environment, command and control was highly centralised. Furthermore, because urban fighting was new to the AFP, rapid operational tempo and simultaneous action were nearly impossible to achieve. The most effective way to achieve tempo in this situation would be the orchestration of multiple effects simultaneously rather than in sequence. For example, walking suppressive fire up, or across, a building in support of the break-in is much more effective than cutting fire completely. Training commanders

to favour simultaneous action over linear effects planning will support achievement of tempo at all levels. This can be achieved by enabling shared understanding (using a Common Operating Picture, such as that provided by a Battlespace Management System, down to small team level) combined with clearly understood and thoroughly rehearsed control measures. Furthermore, continued emphasis on developing junior leaders must be maintained. Having platoons and sections capable of conducting simultaneous activity without micromanagement increases the higher commander's ability to layer multiple effects and achieve decision superiority. The Australian Army's focus on small team leadership and developing tactical acumen is well directed and should continue to be a fundamental line of effort.

## **Use of CS Grenades**

Some infantry battalions used tear gas grenades extensively in Marawi to clear urban areas occupied by civilian hostages. This was conducted to counter IS hostage-taking tactics. Rather than throwing a fragmentation grenade into a room before a clearance, they would use CS grenades to incapacitate the enemy combatant inside, conduct a room entry wearing gas masks, and kill the enemy without killing, or grievously wounding, the hostage.

If faced with a similar situation to Marawi, it is highly likely that teams from the conventional fighting echelons of the Australian Army would have to conduct combat clearance in the vicinity of, or to rescue, hostages. Close combatants should conduct training serials where urban combat clearance is practised while using gas masks. This will help prepare the infantry, and close combat enablers, for the type of urban fighting where the use of fragmentation grenades is inappropriate. It will also allow soldiers to identify, through 'learning by doing', the best employment of CS grenades to support urban clearance, as well as problems surrounding positive identification of targets using chemical, biological, radiological and nuclear defence (CBRN-D) equipment. International law regarding the use of chemical agents in combat may be problematic here. The use of CS grenades may breach international treaties where the opponent is a state actor, although battles such as the Battle of Hue in Vietnam indicate that there is precedent in the use of such agents. The legitimate use of such agents remains contentious, and there may be additional ambiguity when non-state actors are involved.

## Targeting Withdrawal Routes

In Marawi the enemy used covered withdrawal routes, or 'ratlines' (holes dug through walls or floors; or concealed passageways through basements) to enable movement to and from battle positions or to move to depth if a battle position was at risk of being overrun. When these were discovered, the AFP would either have combat engineers collapse the tunnels on top of the enemy or use tear gas to flush the lines out. If using smoke or tear gas, they would concurrently send a drone above the entrance, as they could often find the other end of the ratline by watching for the smoke escaping from the far end.

In this situation, close combatants could adopt a similar tactic. CS or smoke grenades would be used to flush out any enemy tunnels discovered; concurrently, by deploying an unmanned aerial system (UAS) to observe the area and having an interdiction force ready, an infantry-led call sign could rapidly mark the exit to a ratline with the escaping smoke, identify it with UAS, and interdict any fleeing enemy combatants. This would need to be carefully coordinated, but this tactic would mitigate the high risk of methodical and time-consuming subterranean, or 'tunnel rat', clearances. Such subterranean withdrawal routes could be readily rigged with improvised explosive devices (IEDs) or targeted by an ambush.

## Ground-Up Innovation

In the Battle of Marawi, the marines of the Philippine Marine Corps (PMC) had little to no access to smoke grenades. This posed a significant problem for mobility, primarily due to the sniper threat down fire lanes (streets and alleys in particular). As a result, innovation was required to deny enemy observation and enable urban manoeuvre. To conduct crossings, the marines of MBLT10 would carry a long piece of fabric the height of a marine. They attached one end of the fabric to one side of the obstacle and had a runner sprint across the fire lane trailing the sheet behind him. He would then tie it off, taut, to the other side of the obstacle. This then enabled the entire platoon team or combat team to cross with relative impunity, especially as the resource-poor enemy would not risk wasting ammunition by 'drake-shooting'<sup>7</sup> at the sheet.



The above vignette illustrates the value of innovation in combat. Due to the operational realities in Marawi (a resource-poor enemy, limited friendly resupply and a significant number of enemy snipers), the 'sheet method' for conducting urban obstacle crossing was an expediency borne of necessity. The example highlighted above illustrates the value of allowing bottom-up innovation to drive TTPs; finding localised solutions, not necessarily aligned with doctrine, and giving frontline troops the latitude to be creative. The Australian Army has a rich tradition of such innovation in combat, harking back to the famous drip rifles of the Gallipoli campaign.<sup>8</sup>

Clinging to orthodox solutions would have made the AFP predictable and targetable. Building teams where members feel empowered to be involved in problem solving, where critical thinking is the norm and where making honest mistakes in training is accepted and encouraged, is the first step in this process. This is easier said than done and needs to be driven by leaders at all levels. However, if correctly implemented, it will result in a force characterised by agility and innovation rather than tradition and predictability.

## Use of Unmanned Aerial Systems

During the Battle of Marawi, both the AFP and the enemy used drones extensively. Drones were employed down to platoon team/combat team level to observe both friendly troop movement and enemy infiltration and exfiltration routes, movement and locations.

Both forces employed inexpensive, off-the-shelf varieties, as each side would prioritise shooting down one another's aerial surveillance assets. The AFP used a rudimentary marking system to identify friendly unmanned aerial vehicles (UAVs) to ensure they did not accidentally shoot down those from neighbouring call signs.

This would suggest that, at the tactical level, commercial drone technology can be extremely effective at complementing the in-service, encrypted UAS fleet. The consequences of losing a Black Wasp or Hornet in combat would be significantly greater than losing an AUD\$400 off-the-shelf drone that is essentially disposable—the loss of a store-bought drone would not risk losing any controlled or encrypted technology. Any operational security issues would be mitigated by the fact that the information developed from these off-the-shelf drones is purely tactical and, at best, relevant for a very short period of time. Furthermore, it would probably allow frontline units to

replace damaged or capture UASs far more quickly than unit requisition. The other key lesson for the Australian Army is that close combat forces must be adept at using UASs and that there is benefit from increasing exposure to, and understanding of, these technologies.

## **Close Air Support**

Extraordinary firepower was employed to enable the seizure of Marawi. One company from the 2nd Infantry Division employed over 10,000 mortar rounds in three months. Offensive support came primarily in the form of close air support (CAS), intimate support from mortars, and employing 105 millimetre field guns in a direct fire role. The AFP was very effective in employing CAS to enable house-to-house clearances. These strikes were highly effective on the first pass of the aircraft, when surprise could be maintained.<sup>9</sup> However, the enemy became aware of the CAS schedule, and this undermined the effectiveness of the CAS. Once they identified a CAS platform in the air, there was a marked decrease in enemy movement in the open as they waited for the asset to retire and refuel. This limited the effectiveness of the aircraft in both a CAS and an Intelligence, Surveillance and Reconnaissance (ISR) role and, due to the limited number of aircraft and crews available to the Philippines Air Force (PAF), this meant that, once the air window was closed, the insurgents could be confident in acting and/or attacking without concerning themselves with air attack for some time. Planners should be alert to the enemy's tendency to monitor CAS flights, especially if continuous air cover is not available. The number of sorties available, the on-station time and the time required to transit and rearm/refuel before returning to the area of operations should be considered Essential Elements of Friendly Information that need to be protected from the enemy.

## **Control Measures**

Marker panels were found to be the most effective CAS Forward Line of Own Troops (FLOT) marker. However, the enemy was extremely active in employing deception to confuse aircraft and degrade the effectiveness of CAS. The enemy employed dummy marker panels and smoke, and it probably had the benefit of being able to monitor the air-to-ground communication being conducted over un-encrypted Motorola radios. This

made identifying friend or foe extremely difficult and greatly increased the time taken for CAS aircraft to provide support.

FLOT marking techniques for aircraft need to be understood by all soldiers, as qualified joint fire observers/joint terminal attack controllers may not be in a position to conduct the mark themselves. These marks need to be unmistakable as to their origin and easily verified by the aircraft. Clear, common doctrine for the employment of joint fires and a thorough understanding of necessary control measures are critical. Close combatants need to routinely train with their joint fire enablers, and rehearsals of such measures need to occur regularly at the tactical level.

## **Direct Fire**

During the Battle of Marawi the Filipino gunners used their 105 millimetre guns in a direct fire role to penetrate the thick concrete walls prevalent in Marawi. This technique was employed on multiple occasions, with the infantry platoon commander involved directly liaising with the gun crew rather than 'calling for fire'. While direct fire would be difficult for Royal Australian Artillery (RAA) 155 millimetre M777s due to their size and weight, direct fire remains part of RAA doctrine. An understanding of the application of light and medium guns used in this role may prove useful for future urban conflict. Furthermore, the battle demonstrated that the utility of shoulder-fired high-explosive (HE) weaponry, with munitions optimised for the urban environment, including breaching rounds, cannot be overstated. The AFP did not have these for the majority of the five months. Instead, they used their limited shoulder-fired weaponry with unsuited munitions (anti-tank (AT) and high-explosive anti-tank (HEAT) munitions are not suited to breaching a hole in reinforced concrete) or used heavy machine guns (HMGs) (12.7 millimetre) to 'bore' a point of entry (discussed below).

## **Explosive Breaching**

During the Battle of Marawi there was an extraordinary requirement for explosive breaching to support infantry platoon movement. The enemy created complex obstacles in which IEDs were incorporated into rubble obstacles along AFP avenues of approach (AA) and covered with sniper

fire to deny access without sustaining casualties. The AFP response was to generate new AAs through buildings which enabled cover from sniper fire and bypass of IEDs. Initially, mechanical breaching and breaching by fire were both attempted by manoeuvre elements with mixed results. Infantry platoons also used HMGs to bore a point of entry in some buildings when engineers were unavailable.

However, many of the buildings within the city were constructed of thick, heavily reinforced concrete. As such, breaches were often required to be conducted in two stages: the first stage was an explosive breach to strip away concrete, leaving thick reinforcement bars to be reduced in a second stage. Hydraulic cutters were then used to mechanically reduce the reinforcement before assaulting forces moved in.

In Marawi, structural integrity varied greatly from building to building. Where in one building a given charge type would produce a mouse hole, in another it could cause significant damage or completely level the structure. Charge selection was described as a 'dark art' due to the unpredictable nature of the structures, and structural assessment skills were identified as a shortfall. Safety distances were refined through trial and error and balanced against



*Australian Army soldiers demonstrate building clearance techniques during urban combat training. Image courtesy Armed Forces of the Philippines*

the tactical scenario. Combat engineers (CEs) were often only able to move to a room or building to the rear; in the classic 'hugging the belt' technique used by many insurgents, the enemy continually pushed forward to remain within friendly artillery safety distances. There will be the same requirement for significant amounts of explosive breaching in future urban conflict. There will never be enough engineers to support simultaneous manoeuvre. A priority should be placed on light urban breaching skills to enable the infantry to carry and employ their own demolitions.

## **Rubble and Obstacle Clearance**

The enemy placed obstacles, such as parked cars, to delay or deny likely friendly AAs. However, as the battle ensued, the damage caused by CAS and artillery fire created major obstacles to mounted movement and disrupted dismounted manoeuvre. CEs adopted a mounted clearance technique where an M113 would move to the FLOT and occupy an SBF position. An up-armoured bulldozer and guide would then move up and clear a bound of 10 to 50 metres depending on terrain. The bulldozer would then reverse out and allow the M113 to move forward into the newly cleared area and adopt SBF from that position, and to provide security for the next bound. This method was described as 'leapfrogging'. Due to the sniper threat, using dismounted guides was impossible. Instead, guides would use a UAV in conjunction with radio communications in order to remain within cover. Interoperability training between infantry, engineers and armour is essential to ensure that the trust and TTPs required are established.

## **Collapsed Structure Rescue**

Some AFP CEs had received critical training in collapsed structure rescue. This was found to be an invaluable skill set, and it was recommended that all CEs be trained in this as part of lead-up training for any future conflicts in the urban environment. While it is possible to use the skill to rescue friendly forces trapped within collapsed structures, this was not required during the Battle of Marawi. The skills were used primarily in a battlefield clearance team (BCT) role to retrieve intelligence and biometrics from enemy corpses within collapsed buildings. Similar training may be a valuable inclusion in engineer training in preparation for future urban warfare.

## Snipers

One of the major threats to friendly forces was enemy snipers. The majority of these were not the highly trained and well-equipped snipers common to many armies but instead were closer to what might be better termed 'marksmen' or 'sharpshooters' engaging at short to medium ranges. Regardless, they exacted a heavy toll on friendly forces and often imposed significant delay on manoeuvre. Although optic sights were found on a limited number of rifles, most of the enemy sniper weapons utilised iron sights. The vast majority of the insurgent snipers were local to the city or region and therefore had an in-depth knowledge of the city layout. Most of their hides and firing positions, often using tall buildings to dominate all approaches, were well thought out and planned prior to the IS-inspired insurgents seizing Marawi. The insurgents would also utilise hostages as human shields to restrict any opportunities that the AFP had to return fire in their hide location.

Enemy snipers utilised loophole shooting (often called 'murder holes') to deadly effect. They would position hides overlooking choke points, bridges and obvious AAs with excellent fields of fire or onto killing zones where AFP would traverse or dwell. They would then knock a medium-sized hole in a wall. After that, if possible, they would knock a smaller hole in the adjacent room. From the adjacent room they would often set up their hide, allowing them to engage from depth with relatively good cover from fire and concealment.

This tactic was also utilised in stairwells. Knowing the AFP would have to make entry to clear the building, the enemy snipers would cut a hole through the stairwell and sit off some distance. Once the AFP made entry the enemy sniper would have a clear line of sight to the doorway and stairwell entry, allowing the sniper to score a centre of mass hit. The insurgent snipers also made use of dummy hides to draw out or bait the PMC scout snipers to engage. Quite often the PMC scout snipers would enter counter-sniping battles with the insurgent snipers across roads, city blocks and bridges, with the average engagement distance being 150 to 200 metres.

The enemy is extremely cunning and will adapt their tactics to best target Australian soldiers. Continuous analysis of enemy TTPs and dissemination of this information across the force is important in undermining the enemy's

lethality and survivability. Friendly forces, particularly those most likely to be targeted by enemy snipers, should receive up-to-date information about enemy sniper TTPs and the best way to increase their survivability.

The AFP snipers quickly adapted to enemy tactics and began using loopholes and dummy hides as well. Often one team would act as a 'tethered goat' to draw enemy sniper fire while a separate team waited in a concealed hide waiting to engage. The PMC normally work in pairs with mutual support from a regular infantry platoon; however, at Marawi they deployed as a sniper platoon to support major clearance tasks conducted by the dismounted ground forces. One challenge facing the AFP snipers was the enemy's use of UASs. Enemy snipers regularly flew UASs around the battle space to likely counter-sniper locations in order to identify the AFP hides. They also faced the challenge of fleeting opportunity—exposure time of enemy targets was typically very short and at short to medium ranges of unknown distance. The AFP snipers had to learn techniques to enable rapid, accurate engagement of threats at uncertain distances. Finally, insurgents often spent much of the night taking drugs such as 'shabu' (methamphetamine). The PMC scout snipers took advantage of this, as well as the limited enemy NFE, to move into and occupy sniper hides under the cover of darkness.

Improving hide construction is the most effective way to undermine the enemy's use of UASs to compromise hide sites. Deliberate training for fleeting engagements of enemy targets at uncertain ranges is critical in preparation for urban counter-sniping. Observation of enemy habits surrounding drug use should be included in planning. Heavy drug use has been a feature in many conflicts the Australian Army has been involved in, including Somalia (khat) and Afghanistan (opioids). Understanding the type, effect and routine of enemy drug use may identify key enemy vulnerabilities or periods of heightened risk.

One of the major challenges faced by the AFP was the severe psychological toll paid by their snipers. This was a widespread phenomenon experienced across multiple units of snipers and sharpshooters. Anecdotal evidence suggests that some individuals personally killed dozens of insurgents. However, in the latter stages of the campaign a number of AFP snipers were unfit to continue fighting due to the psychological toll paid, despite generally having a significant degree of prior combat experience. The implication

is that the particular kind of killing involved here may have a different psychological impact.

The Australian Army must prepare snipers for the mental pressure of constant killing at short range. Having world-class infantry and snipers who are able to perform to the highest standards in training is important. However, all close combatants, but especially snipers and marksmen, must also be psychologically prepared for repeated, deliberate killing.

## **Combat Trauma**

The AFP platoons had not conducted extensive training in combat trauma management, and their Role 2 and Role 3 equivalent medical facilities were not accustomed to the very high volume of casualties which can be expected during urban fighting, a significant number of which were non-battle casualties (casualties induced by means other than direct fighting). Medical planners should expect higher rates of casualties than usual when fighting in the urban environment. Furthermore, combat trauma management skills must be trained down to the individual level. Such skills save lives—and instil morale.

The battle also highlighted the sheer number of non-battle injuries in the urban environment and the importance of using protective equipment such as helmets, ballistic eye protection, gloves and body armour. The true value of this equipment was found in protecting combatants from secondary fragmentation, falling debris, hitting their heads while moving and cuts and scrapes which so rapidly become infected in this environment.

## **Combat Resupply**

Ammunition consumption became an issue at the Battle of Marawi in terms of both quantities available at 4th line (bulk ammunition depots) and delivery of ammunition and stores to the forward deployed platoons and companies. The 'fight light'<sup>10</sup> concept dictates that fighting echelons need to be enabled by agile, responsive A and B echelons. All echelons need to work together, learn from each other and trust each other if they are to achieve and maintain an edge over such an adversary.



The Australian Army should focus on delivering realistic training for close logistic support in a contested urban battle space. Delivery of rations, water, fuel and ammunition is essential, but training for forward delivery of key urban stores often does not happen. Who will fill sandbags and with what? How will defensive stores be moved through streets blocked by rubble? It is important to ensure that the Australian Army fully exercises all components of combat service support (CSS). Training should be realistic for every component of the fight, especially in the urban environment, where logistics enablers will have to get much closer to the enemy than they will in rural fighting.

## Equipment

Much of the equipment used by the AFP at Marawi was optimised for jungle operations. As a result, they lacked some of the equipment required to operate effectively in an urban environment. For the AFP, the most valuable equipment—other than the platforms used by the combined-arms team and joint fires—was related to individual fighting (body armour and load carriage equipment), personal protection (helmets, ballistic eye protection and fire retardant clothing) and lethality (NFE, weapon ancillaries such as thermal sights and enhanced optics). Furthermore, access to direct fire support weapons, particularly shoulder-fired HE weaponry with multiple munition options, such as breaching munitions and those ideal for firing into enclosed spaces, was also considered a priority.

The Australian Army has addressed some of the equipment issues required to fight and win in the urban environment with recent acquisitions. However, the Australian Army must pursue constant improvement of its equipment to ensure close combatants can rely on both a skills and an equipment advantage.

## Conclusion

The lessons learned by the AFP in the Battle of Marawi when fighting a determined, ruthless enemy are invaluable to the Australian Army. This article highlights the key tactical observations of the combat experienced by the AFP fighting in Marawi and suggests the lessons that the Australian Army can draw from these experiences. Consideration of these lessons

may inform and improve current approaches to force generation and modernisation of close-combat, combined-arms capabilities. The experiences of the AFP have broad relevance to the Australian Army across a number of corps and disciplines, including close combat, offensive support, mobility and survivability, urban sniping and counter-sniping, and logistics.

The Australian Army must become a force that is expert at urban fighting. Urbanisation trends, as well as the existential reality of conflict amongst people in the place where they live, compels us to be expert at this most difficult of environments. Continued emphasis must be placed on the importance of the individual and small team skill set. For the infantry, combat shooting, small team TTPs, battle craft and battlefield fitness are the four factors that ultimately mean the difference between victory and defeat in this environment. Above all else, the Australian Army must have the ability to deliver small teams to the fight that are capable of shooting faster and more accurately than their enemy; can dominate and control complex spaces more rapidly and with fewer casualties; and can operate seamlessly with other small teams or supporting elements. For armour, engineers and artillery, these factors will be different; however, the requirement for small teams and individuals who can master their respective trades and integrate seamlessly in small combined-arms teams is universal. Such small teams, operating seamlessly alongside engineers, artillery and armour—as well as combat medics and military police—fighting as combined-arms sections, platoons, combat teams and battlegroups, are nearly unbeatable.

By studying the Battle of Marawi closely, the Australian Army will benefit from the hard lessons learned from the AFP. The AFP's small teams of close combatants were faced with a number of viciously complex problems and showed remarkable adaptability and innovation in solving these under fire. It is highly likely that, in a similar situation, close combatants will encounter the same problems—Islamic terrorists and violent extremists within the Indo-Pacific region will be studying the Battle of Marawi closely, as it is an example of just how brutally effective a relatively small group can be in causing chaos in a city. The Australian Army should identify the key lessons learned from Marawi and implement them within training and modernisation to maximise its ability to operate, fight and win in the urban environment.

## About the Author

Captain James Lewis is an officer in the 1st Battalion, the Royal Australian Regiment. He led one of the Urban Close Combat (UCC) Mentoring and Training Team (MTT) on Operation AUGURY—Philippines. The observations and lessons included above have been drawn from a number of sources, including key AFP personnel, the initial Commander—Joint Task Group 629, and the initial Commander—JTG629 (Land Component). Observations have also been drawn from other previous MTT commanders from UCC, Joint Fires, Combat Engineering (Urban Search and Breaching), and Sniping and Counter-Sniping.

## Endnotes

- 1 These include, most notably, the Moro Islamic Liberation Front (MILF), Jemaah Islamiyah's Mantiqi 3 (where a significant amount of the training and preparation for the October 2002 Bali bombings took place), the Abu Sayyaf Group (ASG), the Maute Group, and now the Islamic State of the Philippines (IS-P).
- 2 Greg Fealy, 2017, 'The Battle for Marawi and ISIS in South East Asia', The Strategist, Australian Strategic Policy Institute, 23 Aug, at: <https://www.aspistrategist.org.au/battle-marawi-isis-southeast-asia/>
- 3 Footage of the sheer intensity of the fighting can be found at [https://youtu.be/\\_4zXI0X8Brc](https://youtu.be/_4zXI0X8Brc)
- 4 Rear Admiral C Wylie, US Navy, World War II.
- 5 Department of Defence, Australia, 2017, 'JTF 629 Graduates First Class in the Philippines', *Defence News*, 14 Nov, at: <https://news.defence.gov.au/media/stories/jtf-629-graduates-first-class-philippines>
- 6 Reverse-cycle operations consist of conducting training or operations by night with a recovery and rest period during the day.
- 7 Firing at likely (but not confirmed) enemy locations.
- 8 Drip rifles were self-firing rifles used at Gallipoli to deceive the Turks during the evacuation of December 1915.
- 9 Surprise was regularly achieved by jet aircraft; however, rotary wing aircraft were unable to achieve the same effect. Furthermore, many structures were found to be impervious to many munitions up to 2,000 pound bombs. As a result, the AFP began targeting the sides of buildings seeking to cause them to collapse.
- 10 'Fight light' is a concept which focuses on minimising the soldier's load to maximise warfighting capacity. It 'gets weight off the soldier's back'. 'Fight light' seeks the optimal balance between soldier lethality, mobility, survivability, sustainability and situational awareness.



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# The Challenges of Sustaining an Army in Motion

**Lieutenant Colonel Kane Wright**

## Abstract

In an era of fiscal constraint and competing priorities across and external to the Defence portfolio, Army modernisation efforts are challenged by a number of financial and capability pressures. Ranging from the increased cost of technological sophistication in our equipment to the exclusion of capability replacements under the Defence Integrated Investment Program (IIP), these challenges have a dual and compounding impact on Army's modernisation. Future equipment may consequently be inadequately provisioned for sustainment, while in-service fleets are concurrently denuded of funding to address higher priorities.

The pressures facing Army modernisation may be outside the organisation's influence to entirely remove; however, there are several force structure and sustainment considerations available to Army that can mitigate their impacts. Implementing these options would require difficult decisions from Army on capability trade-offs and a potential willingness to at times accept land materiel that may not necessarily be at the leading edge of technology. If applied in a judicious manner, however, and in a way that prioritises investment in and expenditure on those capabilities that directly relate to Army's directed preparedness requirements, the organisation can ensure a more resilient force is sustained through its path of modernisation.

## Introduction

*To say that a little has to go a long way is not an overstatement of the case, quite the reverse in fact.<sup>1</sup>*

Army is presently undertaking its largest recapitalisation and equipment modernisation effort in several generations. While unprecedented and promising to deliver a future force better equipped than any that have preceded it, this initiative comes at great risk of failure if not delivered in a sustainable and affordable manner. To realise the Chief of Army's (CA's) intent of an adaptable and modernised force, Army must apply a balanced approach to modernising that ensures capability is resilient within budget.

The article addresses the 'Preparedness' aspect of the CA's Commander's Statement *Army in Motion*, specifically as it applies to the modernisation and equipping of land materiel to the future Army. While equally relevant, the themes of 'People', 'Profession' and 'Potential' have been excluded, as they relate more directly to other fundamental inputs to capability modernisation (collective training, doctrine and organisation to name but a few). The article posits that the greatest challenge to modernisation is affordability and elaborates by describing the major financial and capability pressures facing the sustainment of Army's current and future land materiel.

The article does not address the issue of how Army should fight for modernisation funding or on which capability areas Army modernisation efforts should be focused. It aims instead to provide recommendations on how best to set the conditions for 'sustainable modernisation'. To this end, the article proposes a series of considerations that innovators and capability managers may apply to mitigate the effects of the financial pressures that are articulated and ensure a responsible approach to modernisation. Each consideration offers options and examples to reduce the impact of these pressures and assist Army's capability managers to innovate and modernise in a sustainable manner. It is prepared not as a critique of existing practices but as a primer for consideration by any Army member committed to modernisation.



*The pressures facing Army modernisation may be outside the organisation's influence to entirely remove, however there are several force structure and sustainment considerations available to Army that can mitigate their impacts. Image courtesy Department of Defence*

## **The Impetus for (and Challenge to) Army Modernisation**

Through the release of *Army in Motion*, CA has delivered a Commander's Statement that articulates his intent for the organisation: one that is constantly evolving, adapting and improving. With this imprimatur, CA has implored Army's officers and soldiers to challenge the status quo, innovate and modernise in order to prepare Army for the challenges of the future environment as encapsulated in his complementary Futures Statement *Accelerated Warfare*.

In the author's opinion, the greatest challenge facing Army's equipment modernisation is affordability. Army's people are intelligent and innovative in exploiting technological opportunities, and the pace of technological change has made possible the fielding of hardened and networked military forces previously considered the domain of science fiction. The budget, however, is limited. This is not a new problem—to quote Army staff commenting on financial pressures in the postwar era of the 1950s, 'Army Headquarters ... is exploiting every possible avenue to get the utmost value from the limited



funds the Parliament has been able to allot them'.<sup>2</sup> Therefore, as Army progresses on the journey of recapitalisation it has begun, with a complete replacement of armoured and unarmoured vehicle fleets, small arms, digital communications and many combat support fleets in the next decade,<sup>3</sup> the challenge of funding and sustaining myriad fleets of increasing technological complexity is a difficult one.

## **The Pressures and Challenges Facing Army Sustainment**

The greatest limiting factor of the Army Sustainment Budget is its static nature. Although the budget is adjusted annually to accommodate consumer price index increases into the future, there is no *real value* increase to the budget across future years. Essentially, Army Sustainment Budgets into the future are determined based on the present cost of sustaining the equipment fleet types and quantities currently fielded across Army; there is no consideration afforded to growth in fleet size, changes to fleet composition or addition of new fleets. Army's only ability to influence and increase this funding is through the Defence IIP, under which the approval of major capital acquisitions generally incorporates an associated funding line for the sustainment of new fleets once introduced. This funding is directly linked to new projects and transfers money to the Sustainment Budget only when approved projects deliver new capability. Within this context, Army's ability to fund and sustain both in-service and future land materiel is affected by a multitude of financial, organisational and capability pressures that broadly fit into five categories. These categories are outlined below.

### **Sustainment Budget Reductions to Address Broader Portfolio Pressures**

While it is Army's obligation to fight for funding, the decision on how much is allocated is ultimately the remit of the Australian government. During periods of fiscal constraint and competing pressures, the Australian government may choose to denude Army funding in order to meet higher priorities across, or even external to, Defence. By way of example, strategic decisions enacted through the Defence White Paper 2013 and its 2016 successor prioritised investment in major Navy and Air Force platforms.<sup>4</sup> To ensure affordability of these capabilities, Army (among other organisations) was required to reduce Sustainment Budgets over several years for reinvestment of funds toward these broader portfolio priorities. To mitigate the impact of this decision,

Army *risk-managed* the sustainment of several general and armoured vehicle fleets, reducing budgets accordingly. This was achieved through the reduction of inventory procurement activities and acceptance of lower levels of equipment serviceability and availability.<sup>5</sup> Although these decisions did not affect Army's immediate preparedness requirements, the longer-term impact of such decisions was to *sub-optimize* the sustainment of the capabilities, reducing available inventory for repairs and hence decreasing capability resilience over time. In other possible scenarios of extra-portfolio financial pressure, the Sustainment Budget might be reduced in order to supplement funding shortfalls for military workforce numbers excess to allocated budgets or because the Department of Defence as a whole has suffered budget reductions to meet other national priorities such as health, welfare or education.

### **Insufficient Sustainment Funding for New Land Materiel Introduced Under the IIP**

The best intent of staff officers and project managers notwithstanding, major capital projects in the IIP may fall short of required sustainment funding provisions to adequately support new materiel. The reasons for this are myriad. Cost modellers may underestimate the total cost of sustainment by error or omission, failing to include critical technical refresh and obsolescence treatment activities. Modellers may also simply utilise cost figures in the lower range of forecast cost envelopes in order to demonstrate project affordability and enhance the likelihood of governmental approval. Conversely, even the most comprehensive and transparent of cost models can be undermined if government assesses that a project's entire sustainment funding requirement is unaffordable and allocates only a portion of this amount. The net impact of these shortfalls is to 'kick the can down the road'. While the allocated provision of funds is reduced, the actual cost of sustainment is not, simply transferring financial pressure to the existing Sustainment Budget. This necessitates the reallocation of funds previously allocated to sustaining other capabilities and causes associated capability trade-offs.

### **Insufficient Sustainment Funding for New Land Materiel Introduced Through Operational Procurement, Rapid Acquisition or Other Innovation Initiatives**

The past two decades of serving as an Army committed to operations both regionally and globally have manifested substantial capability improvements for the force. Operational lessons and innovation have resulted in the

introduction of many capabilities not previously resident in Army, ranging from counter-rocket, artillery and mortar systems through to multiple unmanned aerial system fleets. While operational procurement, rapid acquisition and Army minor project frameworks have facilitated the rapid fielding of this technology to the deployed force, in many cases this has not been accompanied by a holistic approach to sustainment. Historically, many of these acquisitions were limited in scope to equipment procurement and indicative periods of one to three years of sparing and support<sup>6</sup> without an enduring approach to sustain and replace the capability through a dedicated IIP-funded major capital project. The unintended consequence of this approach is that it transfers enduring sustainment requirements to an already committed Sustainment Budget. When this occurs, the requirement to 'absorb' this previously unfunded pressure occurs at the expense of other in-service capability.



*To realise the Chief of Army's intent of an adaptable and modernised force, Army must apply a balanced approach to modernising that ensures capability is resilient within budget. Image courtesy Department of Defence*

### **Increasing Technological Sophistication (and Replacement Cost) of In-Service Land Materiel Not Captured Through the IIP**

The Army of the future is one that will operate increasingly sophisticated and technologically complex land materiel. Legacy radio fleets that were operated using codes and 'scheds' have been superseded by digitised and networked communications with complex cryptographic components. Similarly, Army has replaced vehicle platforms, weapon systems and explosive ordnance with increasingly complex and lethal systems and natures, all of which come at exponentially greater cost than the legacy fleets replaced. Where the IIP captures and modernises these capabilities, consideration is afforded to the increased cost of sustaining these fleets (albeit, as previously highlighted, not always adequately provisioned). Unfortunately, not every equipment fleet is replaced by a project.

There are many fleets of sufficiently low individual value, complexity and strategic importance which do not warrant consideration or priority for replacement through the IIP. These fleets are refreshed, replaced and upgraded only through existing sustainment funding lines, which face increasing pressure and are frequently insufficient when replacements prove to be substantially more expensive. Army's newest modularised BaseX tentage systems, replacing Vietnam-era canvas tentage, are several orders of magnitude more expensive than their predecessors.<sup>7</sup> Similarly, small watercraft and outboard motors used for riverine and estuarine operations are replaced with craft of greater structural complexity and upgraded with more sophisticated mechanical operating systems and onboard computer and Global Positioning System (GPS) capabilities.<sup>8</sup> Each of these fleets in isolation may represent only a fraction of a percent of the total Sustainment Budget; in aggregate, however, they total hundreds of fleets across the Australian Defence Force (ADF) and equate to substantial portions of an already committed budget. As the budget lacks the capacity to absorb exponential cost increases, Army is often incapable of effecting complete fleet replacements in a deliberate and timely manner.

### **Increased Costs to Sustain Land Materiel Beyond Life of Type**

Many materiel fleets are extended for retention in Army beyond their original serviceable life and retained to mitigate and reduce capability gaps. One key driver for this is delays to the delivery of major replacement projects. When this occurs, the service life of legacy fleets may be extended by necessity, albeit at additional cost to fund multiple fleets concurrently or to maintain

obsolescent and ageing fleets. A key example is the multi-year delay to the replacement of the ADF medium and heavy vehicle fleet under Project Land 121, which resulted in the retention of legacy fleets for more than a decade beyond their original life of type. During this period, a lack of repairable items and inventory available from original equipment manufacturers, which no longer supported these fleets, drove the requirement for Army to invest additional funding in the fabrication and replacement of major parts assemblies.<sup>9</sup>

In another example of a driver for life of type extension and cost increase, directed contingency requirements and capability preparedness within Army may preclude the retirement of legacy fleets. The extension of the Black Hawk helicopter life of type from 2016 to 2021 was a decision that was necessary to ensure the continued provision of a troop-lift capability as a mitigator until Army could declare final operational capability for the Multi-Role Helicopter (MRH90). During the period of extension, however, Army bore substantial additional costs to continue to maintain high-cost repairable inventory and contracted support workforce for the Black Hawk platform, concurrent with its sustainment of the MRH90.<sup>10</sup> Although the retention of legacy fleets beyond their original life of type is in many cases a necessity to ensure the preservation of Army's capability effect in support of government, the additional costs are invariably transferred to a fully committed Sustainment Budget. In many cases, funding can consequently be made possible only through a deliberate decision to trade off sustainment to another fleet or other fleets.

## **Balancing Innovation, Modernisation and Enduring Sustainability**

How then does an Army in Motion realise its potential and innovate to deliver new and superior capability, yet do so in an affordable and sustainable manner? Although not exhaustive, there are several considerations when determining how best to define the types, quantities and employment options for our equipment fleets into the future. Each should be weighed carefully against the strategic value of the fleet or capability under consideration, as Army's appetite to sub-optimize or accept risk in specific capabilities will vary based on the significance of each to the joint force.

### **Accept 'Fit-For-Purpose' in Lieu of 'Best of Class'**

While Army should strive to be the best at what it does, the practicalities of budgets preclude the organisation's ability to always operate and equip the leading edge of technology. More importantly, Army should beware of conflating the concepts of 'professional advantage' with 'technological advantage' or, in more colloquial terms, 'being the best' and 'having the best'. This is a false equivalence and subordinates the value of people to the value of equipment as the decisive factor in warfare. Precision-guided munitions may be capable of placing explosive ordnance to within one square metre of a designated target at extended distances, but unit costs several orders of magnitude higher than traditional munitions make replacement of the entire inventory unachievable. This principle applies equally to ADF vehicles, weapons and other land materiel fleets.

It is unsustainable and unnecessary to replace the ADF fleet of weapon-mounted torches on a biannual basis simply because the pace of technology increases the brightness output in lumens at this rate. There is a tendency, however, for some innovators to overemphasise technological advantage as a panacea for Army's warfighting challenges—a false economy that Australia cannot rely upon when in competition with much larger nations. By contrast, Army's focus should instead be to link modernisation and procurement to clearly defined capability requirements and then integrate equipment with the other fundamental inputs to capability in order to maximise the effect delivered. The equipment that meets these functional performance specifications and achieves the requirement may not necessarily be the most sophisticated item on the market.

### **Fund and Equip to Preparedness Requirement, Not the Entire Force**

The cost of modernisation is increasingly shaping Army to prioritise its limited available equipment to areas and units of the highest priority: simplistically, an Army of 'haves' and 'have nots'. This challenge is not unique to Australia—the United States (US) Army is currently looking to apply a tiered access model to its M4 replacement under the Next Generation Squad Weapon modernisation program. The replacement cost of US small arms has required prioritisation only to infantry and special forces units, with remaining forces expected to retain the M4 in order to ensure affordability.<sup>11</sup> Although not palatable, particularly to those supporting or part-time elements that may not receive access to new fleets, tiered access options are relevant where cost models are inadequate to meet the

requirement of the entire force. The Australian Army can learn from coalition exemplars in how it equips its force, prioritising delivery of its most lethal, sophisticated (and costly) capabilities along a basis of issue that aligns with those elements supporting directed preparedness requirements. For limited fleets this has already been applied in Australia with some success. Through the delivery of the Soldier Combat Ensemble modernisation plan, Army has prioritised the allocation of its newest generation of load carriage equipment, protective elements, combat helmets and ocular protection to the ADF's highest land combatant priorities. While this allocation is insufficient to equip the entire ADF within the available budget, it ensures that those units, elements and individuals with directed readiness requirements are equipped with the most advanced protective equipment available. Individuals and units in supporting staff echelons, without commensurate preparedness commitments, continue to utilise legacy systems that remain fit for purpose, despite not being at the leading edge of technology.<sup>12</sup>

Holistic consideration of equipping along preparedness lines also ensures that Army does not denude quantities of equipment in a general manner across every unit in the entire force but, rather, concentrates and preserves equipment holdings in those areas of highest priority. Although this is a hard choice, it is nonetheless also preferable to the occasional practice of 'trading off' and reallocating project sustainment funds to acquisition in order to preserve acquisition quantities that will inevitably be unsustainable at a future point in time.

### **Exploit Opportunities to Retire Superseded Fleets**

Where new technologies present opportunities to modernise and enhance how Army fights and operates, innovators should seek not simply to introduce new equipment but to consider the total capability effect provided and linked capabilities affected. In many cases, this review may identify legacy equipment in interdependent capabilities that has been superseded or rendered obsolete. If these legacy fleets are retired from service, funding previously allocated to them may then be repurposed to offset the cost of new materiel. A case in point is that Army has introduced multiple different bulk liquid storage fleets over several decades. Through examination of the storage options required to support our force under the future ADF Bulk Liquid Distribution project, complemented by bulk liquid modules already delivered under Project LAND 121, it is feasible that many of these legacy fleets could be rationalised and reduced in number. The funds associated



*The pace of technological change has made possible the fielding of hardened and networked military forces previously considered the domain of science fiction. Image courtesy Department of Defence*

with maintaining these legacy fleets may then partially offset the introduction of new capability, or at least spare Army the cost of sustaining duplicate and redundant fleets.

Similarly, new technologies and methods of employment may indirectly realise cost reductions in sustaining 'old' practices. In the area of logistic distribution, the Joint Modular Intermodal Container represents a durable and reusable alternative to traditional cardboard and palletised transportation materials. Although the individual cost of each container is substantially greater than the comparative cost of wooden palletised options, the option for repeated use and repurposing of these items presents the possibility of employing a different distribution model in Army—one that, over time, may realise cost efficiencies in procurement of consumable distribution materiel.<sup>13</sup> In exploring innovative technologies and concepts for employment, Army should continue to ask whether innovations in one area might realise cost savings to fleets or capabilities in other areas.



## **Accept that Army May Not be Able to Field Every Capability It Would Like to Possess**

This consideration is arguably the most contentious for Army to grapple with. It runs contrary to military nature to accept that there may actually be some tasks the Army simply cannot do and some capabilities it simply chooses not to field. For Army to modernise in a sustainable manner however, due consideration should be given to a holistic review of the capabilities Army intends to field as an independent or lead nation in a multinational task force and those which may be facilitated by leveraging coalition partners. To do so would require Service Chief level prioritisation of every major project Army intends to deliver over the next 20 years, with recommendations for government decisions to cancel those projects deemed non-essential to Australia's warfighting capability as a nation. This cannot occur in isolation however, and should be undertaken within the context of how each project contributes to the joint force. The 'harvested' funds from cancelled projects might then be reinvested against under-provisioned projects of higher strategic priority. While not a palatable option, and one that would require government acceptance of reduced capability against a list of prioritised options, this would ensure a more robust force able to sustain the capabilities government has chosen to invest in. The benefit realised through this approach is fewer but more resilient capabilities that have not been 'hollowed out' through reduced and potentially minimised asset quantities to fit within budgets.

## **Conclusion**

Army's recapitalisation and modernisation pathway is one that will enhance the organisation's warfighting capability; however, it comes at a risk to capability resilience if not implemented in a sustainable manner. Competing pressures on finances and capability place Army's modernisation and sustainment budgets under stress, which has an impact on current land materiel and future equipment fleets identified for introduction into service. While Army has varying ability to respond to and treat each of these pressures, there are measures that innovators and capability managers can take when modernising land materiel to reduce the impacts associated with these challenges. By considering the applicability of these measures for each equipment fleet Army seeks to modernise, and holistically across the

entire spectrum of capability Army generates, the organisation may achieve a more sustainable and resilient modernisation path.

## **About the Author**

Lieutenant Colonel Kane Wright is the Commanding Officer of the 1st Combat Service Support Battalion. He is an Art of War Scholar and Distinguished Honour Graduate of the United States Army's Command and General Staff College; and Honour Graduate of the United States Army War College's Strategic Art Program. He has served in regimental, staff and command positions in 1 and 3 Brigades and 17 CSS Brigade. From 2017 to 2018, Kane Wright was a staff officer grade 1 in Army's Directorate of Logistics, responsible for the sustainment of Army's land materiel capability.

## Endnotes

- 1 Editorial Staff, 1954, 'What Does It Cost?', *Australian Army Journal* Vol 13, Nov
- 2 Editorial Staff, 1954.
- 3 Department of Defence, 2013, *Defence White Paper 2013*, Canberra: Commonwealth of Australia, pp 97-98
- 4 Department of Defence, 2013, pp 71-89; Department of Defence, 2016, *Defence White Paper 2016*, Canberra: Commonwealth of Australia, pp 177-79
- 5 Australian Army, 2014, *Decision Brief for Deputy Chief of Army on FY14/15 Sustainment Budget (For Official Use Only)*, 17 Feb
- 6 Australian National Audit Office, 2007, *Audit Report No 3 Management of Army Minor Capital Equipment Procurement Projects, 2006-2007*, Department of Defence, at: [https://www.anao.gov.au/sites/g/files/net4981/f/ANAO\\_Report\\_2006-2007\\_03.pdf](https://www.anao.gov.au/sites/g/files/net4981/f/ANAO_Report_2006-2007_03.pdf)
- 7 When scoping the basis of issue for tentage procured in support of Army's Multi-Role Helicopter capability, Army obtained procurement costings for BaseX tent systems that were several orders of magnitude more expensive than other in-service canvas options: Australian Army, 2017, *Minute—MRH90 Shelter and Tentage Requirement (BaseX Shelter System) (For Official Use Only)*, 23 Oct
- 8 Australian Army, 2018, *Life of Type Review of CA42 Army Marine Systems—Summary of Outcomes (For Official Use Only)*, 23 Apr
- 9 Capability Acquisition and Sustainment Group, 2015, *Minute—Request for FY15/16 Funding from AHQ Unfunded Pressures List—Heavy Recovery Vehicle Crane Replacement Program (For Official Use Only)*, 21 May
- 10 Capability Acquisition and Sustainment Group, 2016, *Minute—Revised Blackhawk Planned Withdrawal Date Sustainment Funding (For Official Use Only)*, 12 Oct
- 11 T South, 2018, 'Major Changes are On the Way for Army's SAW Replacement', *Army Times*, 9 Oct, at: <https://www.armytimes.com/news/your-army/2018/10/09/major-changes-for-small-arms-are-on-the-way-with-the-armys-saw-replacement/>
- 12 Australian Army, 2016, *Introduction into Service (IIS) Directive for the Soldier Combat Ensemble (SCE) Modernisation Plan (For Official Use Only)*, Canberra: Commonwealth of Australia, p 3
- 13 S Gregory, 2007, 'Joint Military Intermodal Distribution System (JMIDS) Joint Capability Technology Demonstration', *Military News*, 30 Jul, at: [https://www.militarynews.com/peninsula-warrior/news/top\\_stories/joint-modular-intermodal-distribution-system-jmids-joint-capability-technology-demonstration/article\\_e4777c23-5041-5319-ac3e-bb67be6d07a4.html](https://www.militarynews.com/peninsula-warrior/news/top_stories/joint-modular-intermodal-distribution-system-jmids-joint-capability-technology-demonstration/article_e4777c23-5041-5319-ac3e-bb67be6d07a4.html)

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# The Innovation Warfighter: Improving Capability and Embracing Industry

**Colonel Richard Barrett**

## **Abstract**

The 2016 Defence Industry Policy Statement (DIPS) emphasises that ‘Australia’s defence industry is essential to the operations of the Australian Defence Force (ADF) and to the capability we need to protect Australia and our national interests’.<sup>1</sup> This is an admirable and logical aim, and perhaps it is actively progressing in the larger Defence–industry partnerships that build ships, submarines and armoured vehicles. However, for addressing the challenges of the individual soldier, the Defence and industry relationship is relatively static and one-dimensional. Trade shows, Land Forces conferences and Army Innovation Days provide an opportunity for industry to display their wares, but they lack dynamic interaction with the user community in a field environment. The Australian Army should develop an ‘Innovation Warfighter’—a hands-on exercise incorporating leading-edge industry innovation and direct engagement and feedback from soldiers. Such an activity would provide an opportunity to seek solutions to capability gaps, test new and novel ideas and provide an invaluable connection between Army and the user community. The development of an Innovation Warfighter would provide an example of how to operationalise the DIPS intent to create a true Defence–industry partnership.

## Introduction

Each year the Australian Army conducts a series of exercises called the Warfighter series, coordinated and assessed by the Combat Training Centre (CTC) based in Townsville. CTC hosts the Warfighter series, where Australian Army units rotate through exercises to test and develop their core warfighting skills.<sup>2</sup> The training is instrumented with electronic tracking and recording mechanisms, is structured and repeatable, and is layered with observer/trainer staff who provide immediate and collated feedback to the training audience for their ongoing development. The framework of the Warfighter series could be easily adapted to assess the utility of innovative capabilities. Utilising one of the Warfighter exercises, an Innovation Warfighter could draw on years of CTC expertise and accumulated warfighting lessons and provide a framework for realistic training aided by a level of instrumentation and expert supervision.



*Australian Army Head of Land Capability, Major General Kathryn Toohey, AM, CSC, consults with a defence industry representative during Army Innovation Day 2018 in Canberra. Image courtesy Department of Defence*

## US and UK Exemplars

Each year the US Army conducts the Army Expeditionary Warrior Experiment (AEWE). In 2017 the activity sought to:

- place emerging technologies into the hands of soldiers for early and credible feedback from the end user
- provide an opportunity to apply lessons learned and validate changes in design
- inform future concepts, organisations and requirements.<sup>3</sup>

The annual AEWE has also been replicated by the UK Army Warfighting Experiment (AWE), the first of which was held in Warminster in April 2017. The UK AWE seeks input from industry to solve capability gaps and refine future requirements by influencing the development of prospective new capabilities, and for industry to understand the requirements of the armed forces.<sup>4</sup>

AEWE and AWE provide forums for the US and UK armies to identify new and developing technologies, but they also offer industry a critical engagement mechanism to get access to soldier requirements and feedback. This enables industry to be involved in the development of capability and treats industry as a true partner. Industry representatives are involved in the early stages of planning and are called upon to submit proposals for equipment to be trialled as part of a field activity. In 2017 AWE established a series of capability questions for industry to respond to:

- Q1: How can we operate effectively in complex, heavily populated terrain?
- Q2: How can we increase our precision?
- Q3: How can we provide combined arms communications in a cluttered electromagnetic environment?
- Q4: How can we generate understanding in an environment when information overload is a risk?
- Q5: How can we sustain our combat power on operations?
- Q6: How should sub-units make use of unmanned air systems?
- Q7: Are there any additional products that do not relate to a particular AWE17 question?

Industry submissions were targeted to address specific capability gaps, and proposals were examined in an escalating series of boards, with successful applicants' equipment trialed and unsuccessful applications briefed and provided with feedback. AWE received 275 initial submissions, and 72 products were selected for evaluation.<sup>5,6</sup>

During the conduct of several weeks of field training, industry representatives provided instruction to soldiers in the use of their prototypes and assisted in the integration of the equipment with soldiers' existing operating systems. The presence of numerous industry representatives with different prototypes also encouraged collaboration between industry partners and multi-system integration. For example, the author witnessed multi-system integration during the AWE as representatives demonstrating an 'air to water harvesting' technology teamed up with a large deployable solar panel power generator. This required the representatives from both organisations to integrate their novel capabilities with each other while also integrating into Army capability requirements and existing soldiers' equipment.

The AEWE and AWE have offered the Australian Defence Force (ADF) the opportunity to participate in their activities. The offer from both nations provides flexibility in commitment, ranging from observer status to participation as analysts or in the provision of troops for experimentation and equipment to be trialed. The ADF, specifically the Australian Army, would be well served by participating in these exercises as observers and with participating troops. A contribution of a small number of soldiers, perhaps up to platoon level, with relevant AHQ and command and control elements would demonstrate the ADF's engagement with key partners and teach valuable lessons for the better conduct of industry engagement and capability development.

The AEWE and AWE activities provide an excellent link between industry and Army. They enable industry to engage in a formal, structured, measured and repeatable activity that provides direct and tangible feedback for ongoing development. For the relevant armies, they enable a structured relationship with industry that provides excellent exposure to leading technologies, an ability to shape those technologies to meet the army's needs, and an interesting and exciting opportunity for soldiers to experiment with leading-edge innovations.



*Learning the lessons from the United States' and United Kingdom's Warfighting Experiments, the Australian Army should develop an 'Innovation Warfighter' – a hands on exercise incorporating leading edge Industry innovation with direct engagement and feedback from soldiers. Image courtesy Department of Defence*



## Australian Defence Force Capability Development Structures

AHQ Land Capability Division and Land Systems Division (LSD) in Capability, Acquisition and Sustainment Group (CASG) are the key capability development organisations that form a relationship to identify user requirements and deliver capability for the land combatant. AHQ owns the capability and CASG is responsible for meeting the equipment needs of the capability owner. CASG is responsible for identifying market solutions and conducting the contractual arrangements with equipment manufacturers to supply the ‘cradle to grave’ capability to Army.

In order to identify the latest and/or more suitable technologies, both the capability manager (AHQ) and the capability deliverer (CASG) require an intimate knowledge of the marketplace. This is a difficult task for both organisations. AHQ is usually staffed by career Army officers who have an intimate knowledge of the user requirement (what soldiers need) but are less likely to have a broad understanding of the capability options available and a limited understanding of the nature of Defence industry and the marketplace.<sup>7</sup> CASG staff also experience challenges in engaging with Defence industry, and they are often constrained (or feel the perception of constraint) by the rigours of the Commonwealth Procurement Guidelines and concerns regarding probity.

### Industry Forums

Given these challenges, perhaps it is understandable that the relationship between AHQ and CASG with the Defence industry remains relatively one-dimensional. The Integrated Soldier Systems Branch (ISSB)—a subordinate branch with CASG Land Systems Division—conducts twice-yearly industry forums in order to inform industry about ISSB projects and opportunities and to hear from industry. These are useful engagement opportunities, but they are limited in their ability to work dynamically with industry to address capability shortfalls or identify solutions. These forums are generally static and do not provide industry with detailed feedback or trial opportunities in a field environment. In a recent engagement with the then Minister for Defence, the Hon. Christopher Pyne, an Australian industry representative sought to have their engineers embedded with Army units in order to better

understand user requirements. In response, Defence declined the request for embedded industry engineers but recommended that the company visit Diggerworks.<sup>8</sup> Diggerworks, as a design, development and innovation organisation, routinely engages with industry to understand opportunities to improve soldier system capabilities.<sup>9</sup> The visit provided the company's representatives with a good insight into soldier requirements, but it did not provide the same sort of engagement and exposure that an AEWE/AWE type of activity—an Innovation Warfighter—could have provided.

## **Australian Army Innovation Day**

Since 2014 the Australian Army has sought a capability edge and to harness the power of Defence industry innovation by hosting an annual Army Innovation Day. These events provide another opportunity to further develop the Defence–industry partnership.<sup>10</sup> Conducted in the latter part of each year, Innovation Days provide an ‘opportunity for industry to present novel capability options that can shape Army’s approach’<sup>11</sup> to capability challenges. In 2017 the focus was on novel weapons and novel effects for a combined-arms team in a joint environment.

The Innovation Day methodology utilises a short-cycle nomination, selection, demonstration and assessment process to present available equipment, tools or enabling systems to a panel of capability specialists and decision-makers.<sup>12</sup> In 2017 the event attracted submissions from 19 companies from Australia, the United States, Europe and Israel, presenting 25 industry proposals.<sup>13</sup> These events provide an additional opportunity for Defence–industry engagement, but, despite substantial interactive opportunities, the format remains relatively one-dimensional and transactional. Defence industry representatives have an opportunity to provide a static display (with limited dynamic opportunities within a lecture hall or foyer) followed by a three-minute ‘shark tank’ pitch. This format provides good opportunities for innovation exposure. However, with no direct soldier engagement in a field environment, cooperative development opportunities are limited. Further, the culminating three-minute ‘shark tank’ pitch benefits salespeople rather than idea developers.



*In order to identify the latest and/or more suitable technologies, both the capability manager (AHQ) and the capability deliverer (CASG) require an intimate knowledge of the marketplace. Image courtesy Department of Defence*

## Land Forces Conferences

Presented in collaboration with the Australian Army, the Land Forces series is ‘an international industry exposition to showcase equipment, technology and services for the armies of Australia and the Indo-Asia-Pacific’.<sup>14</sup> Land Forces expositions provide a key Defence–industry engagement forum that reaches a broad national and international audience. Industry exhibits are further enhanced by a series of conferences, seminars and symposia to address innovation and identify future opportunities for innovation for Defence’s future requirements. This is a critical forum for Defence–industry engagement, but its focus addresses the Defence–industry spectrum at the operational to strategic level and with a static format.

## Brigade Good Ideas Expos

At the other end of the spectrum are Brigade Good Ideas Expos. Good Ideas Expos are an Army initiative to encourage innovation from within

the workplace. Ideas and prototypes are generated by soldiers and junior officers who deal with the challenges of the modern battlefield every day.<sup>15</sup> The 1st Brigade's Good Idea Expo identified that its aim was 'to provide a forum for all 1 Bde and other Darwin based Defence personnel to present innovative ideas or potential solutions to improve Army policy, procedures, or equipment'.<sup>16</sup>

Good Ideas Expos provide a critical mechanism to both reward initiative and encourage idea development, but they are usually disconnected from any industry representation. Army is reticent to allow industry to directly engage with soldiers or units, but, as a result, many of the ideas generated from within brigades are rudimentary or face considerable hurdles in finding an industry partner to bring an innovation to the marketplace. What is missing is a forum to seek capability solutions from industry and then pair successful applications to a realistic environment with direct engagement, feedback and product development with the user.

## **Australian Army Innovation Warfighter**

In an Australian Army context, an AEWE/AWE type activity could deepen the relationship between Army and industry into a true partnership. It could provide an additional layer of engagement that should be synchronised with a diverse group of engagement activities such as the ISSB Industry Forum, Army Innovation Day, Land Forces conferences and Brigade Good Ideas Expos. These existing engagement forums are effective but do not provide industry with an opportunity to engage with soldiers, train them on trial equipment or involve them in the field assessment of emerging capabilities.

An Australian AEWE/AWE activity would require participation of Forces Command units, most likely at the sub-unit or combat team level. Commander CTC has indicated that CTC could provide the exercise framework and the ability to instrument and monitor troop activities; and contribute to the assessment of trialled technologies. Utilising a similar framework to CTC's advanced collective combat training activities, the 'Warfighter' series, an Innovation Warfighter could achieve similar outcomes to the AEWE/AWE activities.

The Soldier Combat System Program (SCSP) and Diggerworks, on behalf of AHQ and LSD, could be in a position to begin to develop the concept of

the Innovation Warfighter in conjunction with CTC. As Diggerworks conducts routine engagement with industry, it would be a suitable organisation to coordinate industry engagement and act as an intermediary between industry representatives, CASG and AHQ.

An ideal opportunity to conduct an Australian Army Innovation Warfighter would be to link it to the Army Innovation Day, with the culminating VIP activity enabling visitors to see the equipment in the field and engage with both industry representatives and the soldiers who have trialled the equipment.

Diggerworks currently engages industry on a regular basis, and many industry representatives seek to provide new equipment for trial to Diggerworks and SCSP as well as have direct contact with units. This approach has led to the identification of many new and useful capabilities, but it lacks structure and efficiency. A number of Australian companies have expressed strong interest in the concept of an Innovation Warfighter, identifying its potential to provide essential input into the needs of the user and direct soldier feedback to enhance product development. Thus an Innovation Warfighter would enable a more structured process for the trial of emerging technologies and lead to better discipline for Army's approach to industry engagement.

Compared with AEWE/AWE, an Australian Army Innovation Warfighter could have a unique addition with the incorporation of successful submissions from Brigade Good Ideas Expos. Harnessing successful concepts identified in Good Ideas Expos and providing an opportunity for them to be trialled in the Innovation Warfighter would provide soldiers with direct recognition from Army and also expose their ideas to the relevant industry partners that may be in a position to bring them to market. The development of appropriate protection for intellectual property would need to be carefully established, but this aspect of an Innovation Warfighter would be a unique point of difference between an Australian activity and those of the AEWE and AWE.

## Conclusion

Government, Defence and industry recognise the requirement to develop productive relationships to identify, design and introduce leading-edge capability for the ADF. Currently, the Defence–industry relationship, specifically as it relates to the soldier system, comprises a series of largely unconnected, one-dimensional engagement forums which does not reach the aim of a true Defence–industry partnership.

The development of an Australian Army Innovation Warfighter would connect industry and soldiers in a practical, controlled, assessed and repeatable structure that would be mutually productive. Industry would gain an opportunity to trial leading-edge designs with their target audience, thus gaining invaluable and timely feedback for their further development. Their presence on field exercises would provide them with insight into the demands of a soldier’s operating environment as well as developing and enhancing a personal connection between designers/developers and soldiers. Army would be able to identify key capability challenges that it seeks to address and have a structured and controlled vetting process and testing regime. Soldiers would leap at the opportunity to test their own ideas and trial new and exciting equipment specifically designed to improve their comfort, performance and effectiveness in a realistic warfighting environment. An Innovation Warfighter could be an ideal opportunity to enhance Army’s capability and provide a tangible example of the DIPS aim of creating Defence–industry partnerships.

## About the Author

Colonel Richard Barrett is currently the Director of Global Operations in Headquarters Joint Operations Command. His previous appointment was Director of Diggerworks—an innovation centre focused on improving the capability of the ADF’s land combatants. He has performed numerous command appointments, most recently as the Commanding Officer of the 5th Battalion, The Royal Australian Regiment. His most recent operational experience in 2015 was as the Chief of Future Operations for Operation Inherent Resolve, which had command authority for all operations in Iraq and Syria countering the Islamic State. He is a PhD candidate with Deakin University and has Masters degrees in International Affairs and Strategy and Planning from the Australian National University and the University of New South Wales.

## Endnotes

- 1 Commonwealth of Australia, 2016 *Defence Industry Policy Statement 2016*, Canberra: Department of Defence, p 5
- 2 CTC conducts several Warfighter exercises throughout each year, focusing on the company / combat team level up to brigade-sized activities. Interview with Colonel Damian Hill, Commander Combat Training Centre, 23 May 2017, Brisbane
- 3 AEWE, 2017, Information Presentation, 2017, at: <http://www.benning.army.mil/mcoe/cdid/aewe/content/pdf/About.pdf>
- 4 UK Army, 2017, 'Testing the Next Generation of Technology', *News and Events: Stay in the Know*, 3 Apr, at: <http://www.army.mod.uk/news/29024.aspx>
- 5 UK Army, 2017.
- 6 The 2018 AWE is titled 'Autonomous Warrior'. One of the key areas under development is the autonomous 'last mile' resupply. The 'last mile' represents the highly dangerous final approach to the combat zone and is crucial to ensuring soldiers have the food, fuel and ammunition to keep them alive and fighting: British Army, 2018, 'British Army Set to Redefine Warfare with Joint Autonomous Warrior', *News*, 20 Jun, at: [https://www.gov.uk/government/news/british-army-set-to-redefine-warfare-with-joint-autonomous-warrior?utm\\_source=892590be-54bb-4848-8ea0-13f84b2da33c&utm\\_medium=email&utm\\_campaign=govuk-notifications&utm\\_content=immediate](https://www.gov.uk/government/news/british-army-set-to-redefine-warfare-with-joint-autonomous-warrior?utm_source=892590be-54bb-4848-8ea0-13f84b2da33c&utm_medium=email&utm_campaign=govuk-notifications&utm_content=immediate)
- 7 The Capability Life Cycle is not taught to Army officers as a part of all corps professional development courses. It is not currently taught to Army officer cadets at the Royal Military College, Duntroon, nor at professional development courses in the All Corps Captains or Majors Course. It is comprehensively covered for selected officers who attend the Capability and Technology Management College, but there are only approximately 35 Army officers selected for this course each year. It is briefly covered at the Australian Command and Staff College (approx. 60 per year) for selected officers at the mid-senior Major level.
- 8 Diggerworks is an organisation based at CASG, but it collaborates with AHQ, Defence Science and Technology Group, academia and Defence industry to enhance the capability of ADF Land Combat.
- 9 Australian Army, 2017, 'Diggerworks', 20 Mar, at: <https://www.army.gov.au/our-work/partnerships/diggerworks>
- 10 Editorial Staff, 2017, 'Army Innovation Day 2017—Novel Weapons and Novel Effects', *Australian Defence Magazine*, 6 Nov, at: <http://www.australiandefence.com.au/yafevent/army-innovation-day-2017-novel-weapons-and-novel-effects>
- 11 Department of Defence, 2017, 'Innovation Day Showcases New Capabilities', 6 Nov, at: <https://news.defence.gov.au/media/media-releases/innovation-day-showcases-new-capabilities>
- 12 Department of Defence, 2017
- 13 Department of Defence, 2017
- 14 Land Forces, 2017, '2020 Land Forces Australia Indo Asia Pacific', at: <http://www.landforces.com.au/>

- 15 Defence Intellectual Property regulations stifle innovation. Defence maintains that any Defence capability idea generated by an ADF member while the member is serving remains the property of the Department of Defence. An innovative approach to rewarding innovation would be a significant boost to Defence's capacity to identify solutions to its own capability challenges. Although participation is strongly supported within brigades for submissions to Good Ideas Expos, actively rewarding innovation, such as retaining a level of individual IP and recompense, would send a strong market signal to idea generators within our own workforce.
- 16 Australian Army, 2017, 1st Brigade, 'Robertson Barracks Good Ideas Expo 24–25 October 2017', Facebook, 27 Sep, at: <https://www.facebook.com/1stBrigadeAustralianArmy/photos/a.1578724675673890.1073741848.1565282057018152/1983811785165175/?type=3>





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# **Ethical Responses in the Aftermath of a Toxic Leader: An Australian Defence Context**

**Dr Jason Mazanov**

## **Abstract**

Toxic leadership, and the management of toxic leadership, remains a significant challenge for militaries and public service agencies around the world. The focus of management activity is typically on identifying and removing the toxic leader. By comparison, there is little discussion of how best to manage a workforce that has survived toxic leadership. Part of the reason for this is an assumption that removal of the toxic leader is an end in itself. However, an ethical analysis of this and other responses in the aftermath of toxic leadership indicates that organisations have a duty to provide ongoing support to those affected. The analysis identifies practical conclusions about policy around effectively preventing, identifying and responding to toxic leadership.

## **Introduction**

Toxic leadership represents an ongoing management challenge for militaries around the world.<sup>1</sup> The aftermath of a recently departed toxic leader, whether they leave of their own accord or a result of management action,

is a difficult time for military subordinates and civilian workers recovering from any psychological, emotional and physical injuries they have sustained. Unfortunately, removal of the toxic leader is usually where the organisational response led by the management team ends; there is rarely follow-up with the people injured by toxic leadership.<sup>2</sup> This raises the question of whether both leaders and the organisation have a duty of care to take action to support members affected by toxic leadership.

The ethical implications of responses in the aftermath of a toxic leader are analysed using teleological, deontological and virtues ethics (using the Australian Department of Defence (Defence) as context) drawn from DeGeorge.<sup>3</sup> The analysis demonstrates that the ethical response in the aftermath of toxic leadership is to engage in actively supporting those people injured by the toxic leader. Actions that fail to provide support for the injured should only occur in exceptional circumstances based on strong justification that prevents prioritising other interests (for example, organisational) for ambit reasons (for example, administrative convenience).

## **Toxic Leadership**

Toxic leadership emerged as a counterargument to thinking on leadership as a definitionally effective, positive and constructive (for example, transformational and charismatic leadership). The concept initially captured 'bad' leadership broadly,<sup>4</sup> becoming a more refined idea as interest in toxic leadership grew.<sup>5</sup> Toxic leadership, as distinct from other types of harmful leadership (abusive/tyrannical, destructive or bullying)<sup>6</sup> is characterised by a lack of concern for followers, has a negative impact on the organisation and is motivated by what followers see as self-interest.<sup>7</sup> Webster and colleagues observe that followers perceive toxic leaders as manipulative, intimidating, abusive or emotionally volatile, narcissistic, micro-managerial and passive aggressive.<sup>8</sup>

One of the key reasons toxic leadership emerged as a dominant concept in leadership research came from military interest. The life-or-death nature of military work makes effective, positive and constructive leadership doctrinal.<sup>9</sup> This makes toxic leadership anathema to military culture and the antithesis of military leadership. The effects of toxic leadership are observable at both the individual and the organisational levels.<sup>10</sup> The effects of toxic leadership for individuals include psychological (distress, anxiety and loss

of confidence), emotional (mistrust, anger and fear) and physical (decline in health) impacts on wellbeing<sup>11</sup> as well as long-term negative impacts on careers.<sup>12</sup> The effects of toxic leadership for organisations range across declining staff motivation, lower productivity, a destructive organisational climate, increased turnover, reputation harms, a reduction in discipline and a loss of professional standing.<sup>13</sup>

## Ethical Ends Justify the Means

Using a teleological approach to ethics, the rightness of taking action in the aftermath of a toxic leader is a function of the consequences of those actions<sup>14</sup>—or ‘the ends justify the means’. This is a ‘consequentialist approach’ that says an action itself has no moral value but the rightness or wrongness of an action can only be understood in its context. This means that any action taken in the aftermath of a toxic leader needs to occur after closely examining the benefits and harms of that action through careful, objective and impartial evaluation of its consequences.<sup>15</sup> The examination



*Toxic leadership, and the management of toxic leadership, remains a significant challenge for militaries and public service agencies around the world. Image courtesy Department of Defence*

of benefits and harms needs to account for any decision rules or principles that might be used to guide what makes an action right or wrong, such as maximising benefits and minimising harms for the greatest number (utilitarianism) or maximising wellbeing or prosperity (eudaimonism).

A utilitarian response to the aftermath of a toxic leader maximises the welfare of the organisation (the greater number). This is because the harms experienced by the small number of military subordinates and civilian workers affected by toxic leadership are less important relative to the large number of people possibly affected by organisational harms (for example, citizens who benefit from that public service). The utilitarian approach suggests containing and responding to the harms *within* a work unit with as few resources as possible (preferably none) to maximise the resources available to the organisation. The way to achieve this would vary by the size of the work unit affected by toxic leader.

Responding to toxic leadership of a small team (for example, a section) means maximising benefit to the organisation by disestablishing (and potentially re-establishing with new personnel) that small team through internal transfer and/or termination. This dilutes the effects of the harms and allows organisational productivity or reputation to recover quickly. For example, this allows the organisation to use scarce resources to enhance products or productivity (for example, purchasing capital equipment) rather than to address the psychological, emotional and physical injuries experienced by military subordinates and civilian workers. Doing so transfers the risk of the harms consequent to toxic leadership from the organisation to the individuals, maximising benefits and minimising harms for the greatest number.

Where toxic leadership is within a larger work unit (for example, a directorate, branch or division), there is less opportunity to transfer risk from the organisation to individuals. The critical decision is who should be the next leader for the work unit—choosing a new leader judiciously to give the work unit the capacity to recover. That is, the organisation invests the risk in the next leader. However, the next leader's success is dependent upon the resources available to support healing the injuries arising from their toxic predecessor (for example, team-building activities).

If the focus is on maximising wellbeing or prosperity, the focus becomes restoring military subordinates, civilian workers and the organisation from

the harms that arose from the toxic leader. For subordinates and workers, efforts go towards identifying those who can recover and those who would be better off leaving the organisation. Unlike the organisationally focused utilitarian approach, which simply transfers and/or terminates subordinates and workers, the eudaimonistic approach would see subordinates and workers who have experienced harms to their careers offered support to establish new careers, with retraining or placement to enhance subsequent prospects for promotion. For organisations, focusing on subordinate and worker wellbeing or prosperity means offering remedies for the harms experienced in an effort to avoid negative impacts on motivation, reputation and turnover.

The teleological account shows that it is ethically acceptable to do nothing in the aftermath of a toxic leader; removal of the toxic leader is sufficient. The limit of activity, whether utilitarian or eudaimonistic, is minimising the level of resources invested in returning the work unit to 'normal' functioning (without the harms imposed by a toxic leader). To be clear, this is investment to the degree necessary to restore normal functioning (which could be significant) rather than systematically underinvesting (which would fail to restore normal functioning).

## **Ethical Means Create Ethical Ends**

In contrast to teleological approaches, deontological approaches assess the moral quality of action independently of the consequences.<sup>16</sup> Kantian deontology offers three tests to determine the rightness of responses to the aftermath of toxic leadership: that the response is consistently universal (equal treatment for all affected people), that the response treats people with dignity and respect, and that the response preserves the autonomy (self-determination) of those involved. Where the utilitarian approach can be justify inaction, Kantian deontology compels some kind of (context-dependent) action in response to toxic leadership. That is, meeting the first criterion of consistency and universality means doing something rather than nothing.

Thinking about 'doing something' becomes a useful thought experiment in how organisations handle toxic leadership. The first outcome of thinking through the issues is that toxic leadership is inevitable (which seems surprising at first blush). This suggests that organisations (especially bureaucracies) should anticipate toxic leadership by establishing policies



*The life-or-death nature of military work makes effective, positive and constructive leadership doctrinal. Image courtesy Department of Defence*

and procedures aimed at preventing harms arising from toxic leadership, as well as policies and procedures aimed at responding in the aftermath of toxic leadership.<sup>17</sup> Prevention activity might include investing in leadership development to avert toxicity or scanning for the indicators of toxic leadership in the workforce (including opportunities for subordinates and workers to identify toxic leadership). Policies and procedures in the aftermath focus on addressing the psychological, emotional, physical and career implications of toxic leadership such as those outlined in the discussion on the teleological approach. Establishing such policies and procedures goes towards satisfying the first criterion in terms of treating everyone the same way across situations.

The second criterion says that the policies and procedures need to treat people with dignity and respect. This includes the toxic leader. Recognising that toxic leadership is the consequence of a complex and dynamic social interaction (for example, a previously effective leader becomes toxic due to changes in circumstances), this means addressing potential toxic leadership without judging the leader as an innately 'bad' person. For example, the policies and procedures must address claims of toxic leadership by

subordinates and workers as legitimate while simultaneously working to avoid stigmatising the leader as toxic. If a leader is identified as being toxic, treating the toxic leader with dignity and respect starts with removing them from the social context without disrespecting them (regardless of how justified it may seem at the time). It also means defending the toxic leader from responses that are disproportionate to their actions. For example, allowing acts of vengeance (for example, vilification on social media) fails to respect the toxic leader as a person who has a life beyond the workplace (for example, as a spouse, parent or volunteer).

The policies and procedures for subordinates and workers need to assess the legitimacy of harms. This seeks to protect the claims of those who have experienced legitimate harms from phony or opportunistic claims. Doing so makes it clear that the harms are authentic and recognised as legitimate injuries. This can be an important part of the healing process. Legitimate psychological, emotional and physical injuries then lead to appropriate responses such as convalescent leave or group-level interventions.

Supporting the self-determination of both the toxic leader and injured subordinates and workers is the final test. For the toxic leader, this might be the opportunity to remove themselves from the workplace, especially if the leader is unaware of their toxicity. For the subordinates and workers, the opportunity to choose how to respond to their injuries rather than having administratively convenient single-method responses imposed may be a good idea. For some, the exit of the toxic leader and return to normal workplace behaviours over time may be enough to heal their injury. For others, it may be choosing interventions that best promote healing, such as individual counselling, art therapy or a punching bag. Like any workplace supporting recovery from injuries, interventions should stop when subordinates or workers have recovered from the injuries arising from toxic leadership.

Satisfying the Kantian approach to deontology would be potentially resource intensive for the organisation; however, resource intensity is irrelevant from a deontological perspective. Combining the above with the practicalities of organisational resource constraints indicates responses in the aftermath of toxic leadership require taking action to the limit that resources permit. That is, the deontologically ethical approach is to optimise the response within resource constraints rather than the teleological maximising of benefit by minimising the resources invested in responding the aftermath of toxic leadership.



## Australian Public Service, Defence and Army Values

The Aristotelian approach to virtues described by DeGeorge is adopted.<sup>18</sup> The foundation of this approach is that experience (wisdom) means a fundamental (doctrinal) judgement about the rightness of responses in the aftermath of toxic leadership needs to be made. That judgement must be consistent with the obligations that exist between members of a society. Virtues in Defence are reflected in values statements and codes of conduct used as the basis for assessing the ethicality of behaviour.

A core challenge to assessing the ethicality of responses is the number of values statements that may apply. For example, using the Australian Army as context, when civilian staff are affected by toxic military leadership, it is unclear whether the stated values of the Australian Army (courage, initiative, respect and teamwork),<sup>19</sup> Defence (professionalism, loyalty, integrity, courage, innovation and teamwork)<sup>20</sup> or the Australian Public Service (APS) (impartial, committed to service, accountable, respectful and ethical) should be used to determine the rightness of responses. In this case, Army values belong to a profession, Defence values are a policy and the APS values are legislated under the *Public Service Act 1999*.

Further, it is unclear whether the values are hierarchical. This becomes relevant if supporting subordinates and/or workers in the aftermath of toxic leadership is ethical under one set of values but unethical under another. For example, a course of action considered ethical under the values of the profession may be unethical under legislated values. The policy of Defence values explicitly states that each set of values works alongside the others. In doing so, it is unclear whether an assessment against all 15 values is necessary to establish a behaviour as being ethically right or wrong. It is beyond the scope of this article to discuss the implications of values hierarchies for the limits of public organisation sovereignty. Suffice it to say that addressing toxic leadership in Army should be in a manner consistent with the values of Army rather than those overlaid by the Defence or APS values statements.

The Australian Army values appear to have a narrative tension between subordinating individual interests to organisational interests and the explicit obligation Army members have to support each other. The value 'courage' asks individuals to subordinate themselves to institutional interests (for

example, the Australian nation and the Army). To some degree, this is the 'service before self' ethos necessary to perform the profession of arms in times of war. The subordination is also reflected in the 'respect' (responsibility to uphold institutional legacies) and 'teamwork' values (the importance of community, allies and partners). This means the rightness of a response in the aftermath of toxic leadership is organisational rather than individual interest. As argued in the utilitarian discussion, the ethical outcome when organisational interests dominate is minimising investment as far as is practical.

There is a tempering of the subordination of individual interests by the unambiguous value Army places in its people. For example, the inclusion of 'compassion' and 'mateship' creates an obligation to provide formal and informal support to those injured by a toxic leader. The value 'initiative' speaks to Army members responding to the aftermath of toxic leadership as an opportunity for the organisation to improve. Members across Army become wiser to preventing toxic leadership, in terms of both identifying the behaviour before it becomes a problem and stopping toxic leaders before they commit harms. The value 'respect' creates a two-way obligation to preserve the integrity of individuals as the basis of Army as an institution. The value Army places in 'teamwork' more explicitly directs support for those affected by toxic leadership. This tempering of 'service before self' creates an ethical burden to support subordinates and workers in the aftermath of toxic leadership.

The Defence values clearly create a responsibility to support subordinates and workers in the aftermath of toxic leadership. They place a much stronger emphasis on preserving relationships across individual (between staff) and organisational (for example, professional standing and whole of government) contexts. In addition to the observations made on the Army values of 'courage' and 'initiative' ('innovation' in the Defence values), the responsibility is easy to see in the explanations of the values, including:

- loyalty— 'treat everyone at all levels with respect, care and compassion'
- integrity— 'do not allow mateship to ... cover up bad behaviour'
- teamwork— 'strong, positive leadership'.

The APS values are more circumspect about the aftermath of toxic leadership. The values of 'respectful' and 'ethical' offer some guidance on where responsibility may lie. Interpretation of the APS values offered by the Australian Public Service Commission explains that being 'respectful' includes treating 'work colleagues with dignity' and that being 'accountable' means explaining decisions to those affected by them.<sup>21</sup> These ideas have some similarity to the dignity and respect test from Kantian deontology. However, like many values statements, the explanation of the value 'ethical' is circular, defined through the concepts of 'trustworthy' and 'acts with integrity'. Both are vague, as the construction of 'trust' or 'integrity' is likely to vary across social contexts. As a result, while the APS values suggest there is a responsibility, the case is significantly weaker than that created by the values of Army or the values of Defence.

The three values statements suggest a level of agreement that there is an ethical burden to support subordinates and workers in the aftermath of toxic leadership. The legally enforceable APS values are lukewarm about whether such action is required. The professionally defining Army values indicate there is a burden, although they integrate sufficient flexibility for when the practicalities of the profession of arms compel prioritising organisational interests. The implication of the Army values is that prioritising organisational interests should be the exception rather than, say, an administrative convenience. The policy-based Defence values are less circumspect; the only ethically defensible response in the aftermath of toxic leadership is support for injured subordinates and workers.

## **The Ethical Burden in the Aftermath of Toxic Leadership**

The analysis indicates there is an ethical burden upon both leaders and the organisation to take action to support those affected in the aftermath of toxic leadership. Only exceptional circumstances justify that ethical burden being lifted, especially when that justification seeks to prioritise organisational over individual interests. The ethical burden indicates that organisations are obliged to have policy that supports both identifying and responding to toxic leadership.<sup>22</sup> That is, organisations are obliged to establish administrative processes for *when* rather than *if* toxic leadership occurs. The identification of toxic leadership could become part of ongoing people intelligence activities (for example, organisational climate surveys).<sup>23</sup> Another response



*The effects of toxic leadership for organisations range across declining staff motivation, productivity, destructive organisational climate, increased turnover, reputation harms, reduction in discipline and loss of professional standing. Image courtesy Department of Defence*

could be to offer ways for members at all levels of the organisation to learn about the key indicators of toxic leadership (and destructive leadership more generally), possibly as part of professional development or mandatory training.

Identification of toxic leadership should trigger a policy-based procedural response. Key to that procedural response is activating support mechanisms. For employees, support mechanisms able to address the span of possible injuries (across psychological, emotional and physical) can become part of workplace health and safety protocols. While some career harms are more easily addressed than others (for example, missed promotion opportunities), more subtle career harms, such as reputational injury, may be more difficult to either identify or fix. Beyond the injuries, the policy can look to develop protocols around re-establishing the group dynamics of the workplace. Of course, there is no requirement to tie responses to resource-intensive activity; for example, a ceremony or celebration could recognise the experience of injured subordinates and

workers or formally recognise people who provided support throughout the toxic leadership (for example, by giving commendations or awards). The focus is on taking some kind of action.

A key outcome of developing policy is that it limits the risk of inappropriately putting organisational interests ahead of individual interests. For example, policy necessarily decreases the risk that reactive management and administrative convenience becomes the basis for failing to do something in the aftermath of a toxic leader.

While there is a focus on supporting those affected by a toxic leader, it is equally clear that there are times when organisational interests take priority. The exceptional circumstances that may justify taking no action include conditions of existential threat and periods of high turnover that preclude meaningful action. It is crucial that the circumstances remain authentically exceptional rather than being substituted with exceptional intellectual gymnastics to justify prioritising organisational interests.

## Conclusions

Contrary to the dominant view that leadership is inherently effective, positive and constructive, organisations have to expect and plan for the inevitable failures of and destructive forms of leadership. For military organisations such as Defence, this means establishing policy aimed at identifying and responding to toxic leadership. An integral part of achieving best practice in this space is the continuing willingness of Defence organisations to ask questions about and respond to toxic leadership.<sup>24</sup>

## About the Author

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## Endnotes

- 1 G Reed, 2015, *Tarnished: Toxic Leadership in the U.S. Military*, New England: Potomac Books
- 2 R Sutton, 2007, *The No Asshole Rule: Building a Civilized Workplace and Surviving One that Isn't*, New York: Warner Business Books; M Whicker, 1996, *Toxic Leaders: When Organisations Go Bad*, Connecticut: Quorum VI
- 3 R De George, 2009, *Business Ethics*, New Jersey: Pearson–Prentice Hall, 7th ed
- 4 J Gallus et al, 2013, 'Intolerable Cruelty: A Multilevel Examination of the Impact of Toxic Leadership on US Military Units and Service Members', *Military Psychology* Vol 25, pp 588-601; G Reed and R Bullis, 2009, 'The Impact of Destructive Leadership on Senior Military Officers and Civilian Employees', *Armed Forces and Society* Vol 36, pp 5-18
- 5 A Schmidt, 2008, *Development and Validation of the Toxic Leadership Scale*, College Park: University of Maryland
- 6 S Craig and R Kaiser, 2012, 'Destructive Leadership', in M Rumsey (ed), *The Oxford Handbook of Leadership*, Oxford: Oxford University Press, chap 25; K Pelletier, 2010, 'Leader Toxicity: An Empirical Investigation of Toxic Behavior and Rhetoric', *Leadership* Vol 6, pp 373–89
- 7 G Reed, 2003, 'Toxic Leadership', *Military Review* Vol 84, pp 67-71
- 8 V Webster, P Brough and K Daly, 2016, 'Fight, Flight or Freeze: Common Responses for Follower Coping with Toxic Leadership', *Stress and Health* Vol 32, pp 346-54
- 9 J Steele, 2011, 'Antecedents and Consequences of Toxic Leadership in the US Army: A Two Year Review and Recommended Solutions', in *Technical Report 2011–3*, Fort Leavenworth: Center for Army Leadership
- 10 Reed, 2003
- 11 Webster, Brough and Daly, 2016
- 12 C Longnecker and L Fink, 2016, 'Managing Your Boss in the 21st Century', *Industrial Management* Vol 58, pp 10-15
- 13 B Schyns and J Schilling, 2013, 'How Bad are the Effects of Bad Leaders? A Meta-analysis of Destructive Leadership and its Outcomes', *The Leadership Quarterly* Vol 24 pp 38-58; M Tavanti, 2011, 'Managing Toxic Leaders: Dysfunctional Patterns in Organizational Leadership and How to Deal with Them', *Human Resource Management* Vol 6, pp 127-36
- 14 DeGeorge, 2009
- 15 J Mazanov, *Managing Drugs in Sport*, Abingdon: Routledge
- 16 DeGeorge, 2009
- 17 Reed, 2015
- 18 DeGeorge, 2009
- 19 Australian Army, 'Our Values', 2016, at: <https://www.army.gov.au/our-people/our-values>

- 20 Department of Defence, 2017, 'The Defence Values', at: [http://www.defence.gov.au/publications/defence\\_values.pdf](http://www.defence.gov.au/publications/defence_values.pdf)
- 21 Australian Public Service Commission, 2016, 'APS Values', at: <http://www.apsc.gov.au/working-in-the-aps/your-rights-and-responsibilities-as-an-aps-employee/aps-values>
- 22 Reed, 2015; Steele, 2011; Tavanti, 2011
- 23 Tavanti, 2011
- 24 Gallus et al., 2013; Reed, 2015.

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# **The Evolution of Australian Army Training Adversaries: 1948–2018**

**Lieutenant Colonel Jim Sinclair**

## **Abstract**

One of the essential requirements for Army training is the creation of a contemporary and relevant training adversary which allows tactics, techniques and procedures to be tested and weapons and equipment to be evaluated. This is an important part of Army's value proposition to government that it can provide directed capability. In most cases, the training adversaries developed by the Australian Army in the past have represented opponents the Army was actually fighting or generic opponents it was unlikely to fight. This led the Australian Army to train for operations against an adversary it was unlikely to fight rather than preparing for probable future conflict.

In 2015, Army adopted the United States (US) Army Decisive Action Training Environment (DATE). DATE provides a sophisticated operating environment and adversary construct which is constantly updated to reflect current real-world operations. The adoption of DATE will transform Australian Army training by providing a contemporary, reality-based training adversary, allowing Army to train for contemporary operations and conduct mission rehearsal exercises against a contemporary adversary for the first time.



## Introduction

One of the essential requirements for Army training is the creation of a contemporary and relevant training adversary which allows own force tactics, techniques and procedures to be tested and permits own force weapons and equipment to be evaluated. This is an important part of Army's value proposition to government that it can provide directed capability.

Until recently, Army single-service training adversaries have been developed by the Australian Army and disseminated via a range of adversary doctrine pamphlets. This process has created a variety of training adversaries over the period 1948 to 2018, most of which have rapidly become outdated. In most cases, the training adversaries represented either opponents the Australian Army was actually fighting or opponents it had just fought. This has led the Australian Army to train for operations against an adversary it was unlikely to fight rather than preparing for probable future conflict against a reality-based, contemporary adversary. The use of the Musorian Armed Forces (MAF) as a training adversary for the period 1980 to 2016 is an example of this approach to training for operations. The necessary updating of training adversary doctrine has been a difficult and time-consuming process. A significant issue has been the identification of suitably qualified personnel to carry out the update process.

During the most recent update of existing Australian Army adversary doctrine (the Musorians), the US Army offered the DATE enterprise to the Australian Army. DATE provides a sophisticated operating environment and adversary construct which is constantly updated to reflect current real-world operations. The adoption of DATE will transform Australian Army training by providing a contemporary, reality-based training adversary, allowing the Australian Army to train for contemporary operations for the first time.

## Historical Background: 1950–2015

The development of adversary doctrine from 1948 to 2015 will be examined through the lens of conflict and operations which have occurred during this period.<sup>1</sup> The strategic and cultural drivers for the development of adversary doctrine in the 1950s, 1960s and even 1970s are difficult to identify; however, an enduring theme which can be traced through the



*One of the essential requirements for Army training is the creation of a contemporary and relevant training adversary which allows own force tactics, techniques and procedures to be tested and permits own force weapons and equipment to be evaluated. Image courtesy Department of Defence*

various iterations of the MAF doctrine from 1980 to 2010 is interoperability. Interoperability is demonstrated by the use of US and United Kingdom (UK) adversary doctrine to develop generic Australian training adversary doctrine.<sup>2</sup>

### **Korea 1950–1953 and the Malayan Emergency 1955–1963**

The first post-1948 attempt by the Australian Army to produce an adversary doctrine pamphlet was *Notes on the Chinese Communist Army* in 1951.<sup>3</sup> It would seem reasonable to assume that this pamphlet was used for training during the period of the Korean War (1950–1953) and the early part of the Malayan Emergency (1955–1963). *Notes on the Chinese Communist Army* comprised 52 pages and allocated five pages to tactics of the Chinese Communist Army.<sup>4</sup> While the communist insurrection in Malaya continued, Australian Military Forces Study Precis Book 8, *The Soviet Army* (1954),<sup>5</sup> was released. This doctrine delivered a generic, Soviet-derived adversary. The precis comprised 24 pages, of which six pages were devoted to tactics.<sup>6</sup> While *Notes on the Chinese Communist Army* represented an opponent the Australian Army was actually fighting in Malaya and Korea, The

*Soviet Army* did not. The Soviet precis may have been released as a result of Australia's entry into the Australian, New Zealand and US Treaty (ANZUS) in September 1951 or the signing of the South-East Asia Collective Defence Treaty by the US, Australia, New Zealand, France, Britain, Pakistan, Thailand and the Philippines in September 1954, establishing the Southeast Asia Treaty Organisation (SEATO).

### **The Pentropic Reorganisation: 1960–1965**

The 1961 pamphlet *The Phantom Army (Provisional)*<sup>7</sup> depicted the enemy as both a guerrilla and a conventional force. The aim of the pamphlet was to provide information on the 'enemy', giving details of military organisation, weapons and tactics. This pamphlet established a format which remained largely unchanged throughout the generic adversary pamphlets written up to 2016.<sup>8</sup>

*The Phantom Army (Provisional)* provides an early representation of a hybrid threat<sup>9</sup> by discussing the use of local bandit groups with revolutionary, insurgent or guerrilla forces and conventional military forces;<sup>10</sup> however, the bulk of the pamphlet was devoted to conventional forces.<sup>11</sup> Like *The Soviet Army*, *The Phantom Army (Provisional)* did not represent an adversary which the Australian Army was likely to fight at the time. This publication was the



*Work commenced on the updating of obsolete adversary doctrine in September 2014, as part of the SAF. Image courtesy Department of Defence*

first iteration of a generic training adversary, although the conventional force it described was clearly based upon the armed forces of the Soviet Union, with a South-East Asian hybrid threat. Additional guidance on the 'enemy' was provided by *Notes on the Phantom Army (Provisional)*, also published in 1961.<sup>12</sup>

*The Phantom Army (Provisional)* was superseded by *The Enemy 1964*<sup>13</sup> in July 1964. The new training adversary pamphlet represented a minor revision of *The Phantom Army (Provisional)*. At 185 pages, *The Enemy 1964* was much longer than previous versions and continued to reference a hybrid threat by describing a Soviet-derived conventional force with a South-East Asian insurgent threat. These training adversary pamphlets led the Australian Army to train against a Soviet or Soviet-derived adversary and a South-East Asian communist insurgent force in the period from 1951 to 1966, providing a more relevant training adversary.

### **Confrontation: 1965–1966**

In March 1965, the Australian Army deployed troops to Borneo to defend Malaysian interests and remained in place until August 1966. *The Indonesian Army* (1966),<sup>14</sup> originally released at the security classification of 'confidential', delivered a much more detailed depiction of an actual opponent than the earlier *Notes on the Chinese Communist Army* (1951). During the period when the Australian Army was in Malaysia between 1964 and 1972, the Army used both *The Enemy 1964* (Soviet-derived adversary with South-East Asian hybrid threat) and *The Indonesian Army* (1966).

### **Vietnam: 1962–1972**

Although Australian troops had deployed to Vietnam in 1962, the training adversary remained *The Enemy 1964*, which would have been of little use in preparing Australian troops for the type of adversary they would face in South Vietnam. It was not until July 1970 that *The Enemy 1964* was superseded by *The Enemy 1970*, released in two parts.<sup>15</sup> *The Enemy 1970 Part 1* covered communist insurgent and guerrilla units and closely resembled the enemy encountered in the Republic of South Vietnam, with many references to Viet Cong tactics, techniques and procedures. This pamphlet expanded on the revolutionary, insurgent and guerrilla (hybrid) forces which appeared in part 1 of *The Enemy 1964*.

*The Enemy 1970 Part 2* dealt exclusively with communist conventional forces, once again expanding on information contained in part 2 of *The*

*Enemy 1964*. The adversary orders of battle (ORBAT) contained in this pamphlet are overwhelmingly Soviet, as are the majority of weapons systems. Included in this expanded doctrine was limited coverage of Chinese Communist (CHICOM) equipment. *The Enemy 1970* provided a relevant training adversary for the period 1970 to 1972. However, after the withdrawal of Australian troops from Vietnam, its training value decreased.

### **The Long Peace: 1973–1986<sup>16</sup>**

*Training Information Bulletin Number 26: The Enemy*<sup>17</sup> (TIB 26) was released around 1972. This pamphlet once again included an insurgent threat; however, the balance of revolutionary, insurgent and guerrilla forces to regular forces shifted fundamentally. The bulk of TIB 26 was devoted to regular forces, with only one chapter out of nine devoted to irregular forces. Once again, the training adversary had become largely one-dimensional. TIB 26 contained an ORBAT for an initial adversary lodgement force comprising organic divisional units and supplementary forces allocated from corps level. This pamphlet also delivered, for the first time, an abbreviated country study and details of Soviet weapons systems. TIB 26 revisited the format established by *The Phantom Army (Provisional)* and *The Enemy 1964* in the way the training adversary reverted to a Soviet-derived adversary with South-East Asian hybrid threat in the absence of any other strategic guidance.

### **The Musorian Armed Forces**

The 1980 publication MLW 3-2-2 *The Musorian Armed Forces* (MLW 3.2.2) significantly reworked the previous generic training adversary pamphlets, from *The Phantom Army (Provisional)* (1961) to TIB 26 circa 1972. MLW 3-2-2 created the fictitious country of Musoria, and its military forces (MAF). The Australian Army was destined to fight against this fictitious training adversary, which employed a mix of Soviet and CHICOM tactics, for most of the next 37 years.<sup>18</sup> Comprising 470 pages, MLW 3-2-2 was the largest training adversary pamphlet produced at the time. It incorporated doctrinal templates, ORBATs, arm of service and rank insignia, and adversary weapons and equipment. Although the hybrid theme was continued in this pamphlet, conventional tactics comprised a quarter of the content. Part 4 of this pamphlet devoted 90 per cent of its content to conventional tactics. MLW 3-2-2 continued to be used to provide the training adversary for conventional operations at formation level for almost 17 years (1980–1996) until *The Musorian Armed Forces Army Trial Doctrine 4.2 Aide-Memoire*

(1997) (*Aide Memoire* (1997)) and *The Musorian Armed Forces Army Trial Doctrine 4.3 Land Operations, Tactics, Techniques and Procedures* (1997) (*Land Operations, Tactics, Techniques and Procedures* (1997)) appeared.<sup>19</sup>

*MLW 3-2-2 The Musorian Armed Forces Part 5 Aide-Memoire* (1980)<sup>20</sup> (*Aide-Memoire*) was developed from the pamphlet of the same name. The *Aide-Memoire* was meant to serve as a summary of main publication and was small enough to carry in one of the map pockets of the uniform of the day. Unfortunately, in the process of transposing data from *MLW 3-2-2* to the *Aide-Memoire*, the equipment tables became corrupted. As a result, the *Aide-Memoire* proved to be an unreliable aid to training and was quickly removed from service.<sup>21</sup> This was the only time that a true aide memoire (summary) was produced in support of a training adversary pamphlet.

### **Defence of Australia: 1987–1998**

The Hawke Government tabled the Defence White Paper (*The Defence of Australia* 1987) in Parliament as a ‘Policy Information Paper’ on 19 March 1987. This document presented a 10- to 15-year outlook<sup>22</sup> and its change in strategic direction led to the creation of a training adversary configured for the conduct of low-level operations against the Australian mainland. The new adversary developed for this purpose was the Kamarian Armed Forces (KAF);<sup>23</sup> however, the MAF continued to be used as the training adversary for conventional operations at formation level.<sup>24</sup>

*MLW 3.2.3 Kamarian Armed Forces* (MLW 3.2.3) was released in 1993<sup>25</sup> and included 46 pages of annexes. This new pamphlet was the first generic adversary doctrine in which coverage of irregular forces outnumbered coverage of conventional forces by three to one. This pamphlet became obsolete at the end of 1997, when it was superseded by the *Aide-Memoire* (1997) and *Land Operations, Tactics, Techniques and Procedures* (1997).

*The Musorian Armed Forces Trial Doctrine*,<sup>26</sup> released in 1997, set the pattern for future generic adversary training pamphlets. This update of adversary doctrine was the first to portray a conventional adversary only—there was no longer any reference to a hybrid threat. This doctrine was introduced in two volumes, and future updates of Musorian doctrine continued to be released in this two-volume format up to 2010.<sup>27</sup> The *Aide-Memoire* (1997) contained 10 new chapters of tactics, techniques and procedures, which would continue to be reproduced in updated versions of adversary doctrine based on the MAF until *Land Warfare Procedures*—

*General 7-5-5 Training Adversary* (LWP-G 7-5-5) was written in 2016. Accordingly, during this period the training adversary continued to depict a Russian-derived, large-scale conventional force, despite a number of deployments in which such an adversary was never encountered.<sup>28</sup>

### **War and Peacekeeping: 1999–2014**

The Australian Army was almost continually on operations from 1999 to 2014. Operational commitments included stabilisation missions in the Asia-Pacific and coalition operations in the Middle East. In spite of this, the MAF continued to serve as the training adversary in the Force Generation (FORGEN) domain, providing limited training value for troops deploying on operations. The *Aide-Memoire* (1997) was replaced by *LWD 7-5-2 Musorian Armed Forces—Aide-Memoire (Developing Doctrine)*, which was released in 2001<sup>29</sup> and was intended to be used from 30 December 2001 to July 2002.

The *Musorian Armed Forces Army Trial Doctrine 4.3 Edition 1 Version Land Operations, Tactics, Techniques and Procedures, Part 1* (1997) was replaced by *LWD 7-5-3 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures (Developing Doctrine)* in 2001.<sup>30</sup> The new pamphlet delivered the same 10-chapter structure as its predecessor, running to 414 pages. Like the 1997 doctrine, the 2001 doctrine contained no hybrid content and continued the process of replacing MLW 3.2.2 (1980) and MLW 3.2.3 (1993). Under the 2001 doctrine, the MAF assumed the role of the Australian Army's sole training enemy. The new 2001 doctrine provided the user with a far more detailed training enemy than had previously been available; however, the new training adversary continued to be based on the fictitious nation of Musoria, providing limited training value for troops deploying on operations.

### **Doctrine Confusion: 2002–2013**

The period 2002 to 2013 saw the release of three new training adversary doctrine pamphlets. Confusingly, *LWP-G 7-5-2 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures, Developing Doctrine* (2010)<sup>31</sup> was a reissue of *LWD 7-5-3 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures (Developing Doctrine)* (2001). The only new piece of training adversary doctrine released in this period was *LWD 7-5-3: Doctrine Note 1—2008 Non-military Forces and Organisations—Operational Models*<sup>32</sup> (Doctrine Note). The Doctrine Note was a significant departure from the previous 28 years of MAF doctrine, breaking new ground by dealing with asymmetric operations and by

reintroducing a hybrid element to training adversary doctrine. The pamphlet comprised 126 pages, contained seven chapters (four of which were Reserved—that is, never issued) and was intended to be endorsed by 2009.

*LWP-G 7-5-2 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures, Developing Doctrine* (2010)<sup>33</sup> comprised 416 pages and was a reissue of *LWD 7-5-3 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures (Developing Doctrine)* (2001) (414 pages). Strangely, it superseded the 1997 doctrine and was intended to be used in conjunction with *LWD 7-5-2 Musorian Armed Forces—Aide Memoire (Developing Doctrine)* (2001), which was still current doctrine at the time. Consequently, with the exception of the Doctrine Note, training adversary doctrine in this period continued to provide limited training value for troops deploying on operations.

## Recent Developments: 2014–2018

### Foundation Warfighting

The *Foundation Warfighting Training Management Framework Directive* (FWF TMF Directive) represented an attempt to increase the relevance of training in the Operational Generation (OPGEN) domain. Released on 2 December 2014 by Commander Forces Command, the FWF TMF was intended to generate a contemporary standardised adversary framework (SAF) and remove from use the myriad ‘Red Books’ used to provide up-to-date adversary doctrine. It was also intended to ensure a standardised adversary appearance in terms of uniforms and weapon systems.

Work commenced on the updating of obsolete adversary doctrine in September 2014 as part of the SAF. The updating process was conducted with the support of the Weapons and Technical Intelligence Section of the Defence Intelligence Organisation (DIO), which advised on ORBATs and weapons systems. The new adversary doctrine was initially allocated the title *LWP-G 7-5-5 Musorian Armed Forces—Organisations, Tactics, Techniques and Procedures*. However, this pamphlet was renamed *LWP-G 7-5-5 Training Adversary* when submitted for sponsor clearance in March 2018.<sup>34</sup> *LWP-G 7-5-5 Training Adversary* introduced a four-tiered weapons system borrowed from DATE, heralding a new era in training adversary paradigms.



## **The Land Combat Training System**

In December 2015, Headquarters Forces Command (HQ FORCOMD) released the *Land Combat Training System* (LCTS). The LCTS provides the means by which the pillars of the Army's Land Training Support Systems could be synchronised with Army's training environment. The four key components of the LCTS are the Land Adversary System (LAS), the Land Simulation System (LSS), the Land Training Area and Range System (LTARS), and Introduction Into Service (IIS). The LAS was to effectively replicate contemporary threats and was to be both scalable and adaptable. The LAS, as part of the LCTS, was intended to evolve Army's SAF into an integrated adversary system which would provide a credible training adversary supported by doctrine; simulation models and metadata; and 'live' capabilities. This approach was to enable the development of a training adversary which could be scaled by force size and capability to meet Army's Foundation Warfighting training needs for Army Training Levels 1–8.

In spite of the release of the LCTS, the updating of obsolete adversary doctrine continued. The updating process was completed in October 2016, when the new single-volume Musorian doctrine, *LWP-G 7-5-5 Training Adversary*, was sent to Land Doctrine Centre for final editing.<sup>35</sup>

## **Evaluation of DATE in 2014–2016**

The utility of DATE as a replacement for the Musorians as Army's single-service training adversary was investigated in 2015. At the time both the armed forces of both the UK and Canada had adopted DATE as their training adversary, while New Zealand was still considering its adoption. The Australian Army sought advice from both the UK and Canada regarding the implementation of DATE and decided against it due to the significant financial and personnel investment required for implementation and concerns that DATE would not be able to perform the functions of a joint training adversary for Exercise Hamel/Talisman Sabre.

Accordingly, in December 2014, the Chief of Army confirmed that the MAF would remain Army's single-service training adversary; the Joint Exercise Operating Environment (JEOE) would be used to develop the joint training adversary for Exercise Hamel/Talisman Sabre, with the KAF filling the role of training adversary; and a 'watching brief' would be maintained in relation to the possible future use of DATE as Army's single-service training adversary.<sup>36</sup> As a consequence, DATE continued to be evaluated for possible use as Army's single-service training adversary. The British and Canadian Armies

had, by 2016, mandated DATE as the common operating environment for training at divisional level and below, and New Zealand was evaluating the model. Subsequently, the realisation that the adoption of DATE by Australia's partners meant that Australia would enhance Army's multinational interoperability by following suit.

The LCTS described the need to generate a training environment which replicated the complexity and challenges faced by land forces across the spectrum of conflict. Consequently, Army's LAS needed to generate a training environment inherently linked to the operating environment and to provide coherency and consistency within the Training Management Framework and throughout the Army Training Continuum (ATC) as described in *The Ryan Review* (2016).<sup>37</sup> While the Musorian construct had served as a 'passable' training adversary for some time, it inadequately represented contemporary threats and provided limited support to training across live, virtual and constructive domains. The DATE package offered significant benefits, including the richness of its operating environment, which is documented in a comprehensive unclassified library that is continuously updated by US Training and Doctrine Command's G2 enterprise of some 400 personnel.

### **Endorsement of DATE as Army's Single-Service Training Adversary**

In late 2016, the Director of Training Systems at HQ FORCOMD travelled to the US to see for himself what the DATE enterprise could offer the Australian Army. The visit convinced the Director of Training Systems that the extant training adversary paradigm (the MAF) should be abandoned and the DATE enterprise adopted. Accordingly, Head Modernisation and Strategic Policy—Army was convinced of the need to endorse the use of DATE to support Army Training Levels 1–5 in November 2016 while also endorsing the Headquarters Joint Operations Command sponsored JEOE as a suitable adversary construct for joint and collective training. Factors leading to this decision included that DATE provides a contemporary operating environment and adversary construct which is continuously updated; that DATE has been adopted by the other ABCA nations, thus enhancing interoperability; and that DATE is supported by the resources of US TRADOC, whilst Musorian doctrine has typically been updated via a 'cut and paste' process every five years or more, undertaken by one author supported by advice from the Weapons and Technical Intelligence Section of DIO.

## DATE Working Group February 2017

Headquarters Forces Command convened a DATE Working Group in February 2017. The Working Group was sponsored by the Directorate of Training Systems (under command of DG TRADOC) and was attended by personnel from US TRADOC, the UK, Canada, Australian Training Centres and Training Establishments and the Australian Defence Simulation and Training Centre. The purpose of the Working Group was to develop a plan to implement DATE as Army's single-service training adversary for Army Training Levels 1–5.

Friction points which emerged at the DATE Working Group included the need to abandon the use of doctrinal templates, the use of DATE Caucasus terrain for Australian Army training, and the need to maintain the JEOE for Exercise Hamel and Exercise Talisman Sabre. The need to abandon the use of doctrinal templates has led to a realisation that certain steps of both Intelligence Preparation of the Battlefield and the Military Appreciation Process need to be changed in doctrine, as the use of doctrinal templates is currently included in both staff processes. These doctrinal changes are yet to be made.

DATE arguably has limitations in its current form and does not represent Australia's regional context and littoral operating environment. However, the development of the DATE—Pacific (DATE–P) operating environment will address this issue and is expected to be delivered by 2020.<sup>38</sup> In the meantime, 'terrain draping' will be used to generate digital terrain for use with Australian simulation systems. Terrain draping will involve superimposing Caucasus terrain layers obtained from the US on Australian training areas. It is intended that key terrain features will remain unchanged, but township names will be changed and a constructive wraparound will be created, which will be aligned with the Australian DATE Campaign Plan. Terrain data is essential for Exercise Hamel and Combat Training Centre activities and for training centres which use battlefield simulation to support their courses.

From 2018 Army began to replace the MAF with the DATE enterprise as its single-service adversary and operating environment for Army Training Levels 1–5. Army also recognised the need for a joint training adversary for Exercise

Hamel and Exercise Talisman Sabre and, accordingly, will continue to utilise HQJOC's JEOE for joint collective activities at Australian Training Levels 6–8.

## Description of the Decisive Action Training Environment Enterprise

DATE is a US-sponsored operating environment and adversary construct featuring conventional, irregular and hybrid adversaries. The DATE environment is fictitious but is constructed from a composite of real-world terrain and operational conditions. DATE provides country studies for five fictitious countries: Ariana, Atropia, Donovia, Gorgas and Limeria (see Figure 1).



**Figure 1. All DATE Country Studies Address the PMESII-PT variables<sup>39</sup>**

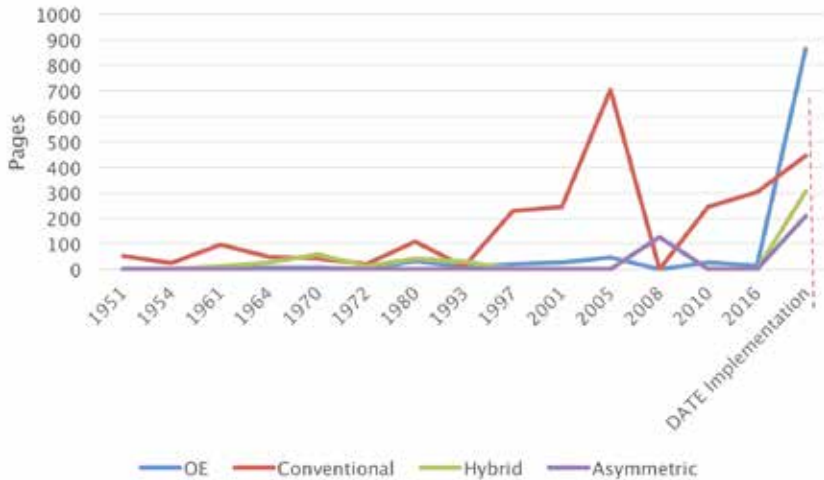
The building blocks of DATE include operational conditions, threat ORBATs, equipment tables and hybrid tactics. DATE is designed to support training needs across the individual and collective spectrum. DATE is continuously informed by the rapid infusion of lessons learned and features operations short of war and a hybrid threat opposing force.<sup>40</sup>

Threat doctrine for DATE is composite in nature, contains the full spectrum of threats and is primarily based upon states and non-state actors, including China, Russia, Iran, North Korea and ISIS. As a consequence, for the first time DATE provides a contemporary adversary which employs current, real-world operational tactics, techniques and procedures. The adversaries within DATE are flexible and adaptive and do not conform to tactical templates. The Australian Army will be required to adjust its approach to tactics training in order to realise the full benefits of a versatile adversary as delivered by DATE.<sup>41</sup>

DATE also provides a contemporary unclassified exercise development tool, simulation entity and data management system consisting of a Virtual Opposing Force (OPFOR) Academy which comprises a total of 28 hybrid threat tactical examples (from platoon to company level) designed to support live, virtual and constructive training. It also offers an Information Operations Network (ION) reflecting social media and digital domains. The content of this network is housed on closed intranets, unique to each exercise and accessed via the web. This allows the trainees to search social media content specifically built to match their scenario. The network supports intelligence, information operations, and civil–military cooperation training. The DATE OPFOR is experienced in the application of the attributes of information warfare.<sup>42</sup> ION enables the training adversary to conduct information warfare activities to support training outcomes.

### **Hybrid Threat**

DATE restores to Army training the hybrid threat, which disappeared from Australian-developed adversary doctrine in 1997 (see Figure 2). *TC 7-100 Hybrid Threat* is the lead pamphlet in the hybrid threat series. It describes the hybrid threat and lays out key hybrid threat concepts of regular, irregular and criminal elements. Other organisations within the operating environment are motivated by personal gain (for instance, shadow political groups, criminal elements and private corporations). Hybrid threat forces may share a unified purpose. These forces can align either temporarily or for longer periods to achieve mutually beneficial goals.



**Figure 2. Content of Australian Army Training Adversary Doctrine**

Modern adversaries understand that the environment that would produce the most challenges for western military forces is one in which conventional military operations are executed in association with irregular warfare. In addition, there is a synergy to the simultaneous use of regular and irregular methods that is difficult to counter. Synergy will be achieved by a threat state actor executing conventional operations that ensure the opposition is also simultaneously presented with an irregular warfare environment; or by a threat non-state actor conducting irregular warfare that integrates conventional means and tactics into its operations.

**DATE Implementation: 2017–2020**

The DATE Working Group decided that DATE would be transitioned into Army over 2017–2020 by the DATE team at Training Systems Branch, HQ FORCOMD in order to support individual and collective training. DATE was to be introduced into Army’s individual and collective training continuums commencing in January 2018. DATE was integrated into Exercise Hamel 18<sup>43</sup> as the first collective activity to test and implement DATE. It is intended that the Combat Training Centre will be a regular user of and contributor to DATE across the live, virtual and constructive domains (enabled by Land Simulation Centre (LSC)) for up to six exercises annually by 2019.

**Terrain and Simulation**

US TRADOC at Fort Leavenworth (Kansas) is in the early stages of creating the new DATE–P (based on the Philippines) operating environment, which

is planned for release in 2019 or 2020. The Australian Army provided a short-term embed to assist in the design of this environment, intended to ensure that it is contemporary and reflects the Australian Defence Force's requirements for training in the region (Melanesian/Polynesian, Indo-Malay et cetera). A small team at the 1st Intelligence Battalion continues to support the development of DATE–P. While DATE–P is yet to be completed, DATE–Caucasus is a mature operating environment, used by ABCA over the past three years, with a large repository of data to leverage from. While a transition to DATE–P is a logical step, implementation is unlikely to commence before 2019–2020.

### **Australian Army DATE Campaign Plan**

In order to standardise training across continuums and environments, a DATE Campaign Plan originally developed by the Canadian Army has been adapted for Australia. The Australian Army DATE Campaign Plan is based upon an invasion of Atropia by the armed forces of Ariana. The United Nations response to this invasion was to raise a Combined Joint Task Force (CJTF), the land component of which includes a Canadian-lead Multi National Division, with an Australian Combat Brigade allotted. The identified adversary force for this Campaign Plan is the 25th Mechanised Division Tactical Group, part of the 2nd Operational Strategic Command of the 3rd Arianian Army.

### **Adoption of DATE by Other Services**

Although the DATE enterprise represents a training adversary which is land-centric, the operating environment and adversary construct contained in the DATE enterprise does have appeal outside Army. The Royal Australian Air Force has decided to introduce DATE Caucasus into all Air Warfare School (AWS) courseware immediately. DATE Caucasus will be used in pilot courses at the AWS from 2019.

In summary, DATE is both evolutionary and revolutionary as a training enterprise. DATE is evolutionary in that it includes many of the attributes of the Australian Army's traditional 'home-grown' adversary doctrine (country studies, orders of battle, hybrid threat, tactics, techniques and procedures, and weapons data). DATE is revolutionary for the following reasons. First, the size and scale of the DATE enterprise dwarfs the Australian training adversaries developed between 1948 and 2016, providing a flexible, agnostic adversary construct. Second, DATE is a US product and is continuously updated. It is constructed from a composite of real-world

terrain (Caucasus region), operational conditions, threat actors, tactics and equipment. Third, DATE will align future training with other ABCA partners and will allow training material to be shared. Fourth, DATE portrays a free-thinking adversary, abandoning the doctrinal templates which have been a feature of Australian Army training adversaries since 1961. DATE places much greater emphasis on the hybrid threat. Finally, DATE has been created in the digital age, providing opportunities to support live, virtual and constructive training. DATE supports simulation via the use of digitised terrain.

## Conclusion

Until recently, Army single-service training adversaries have been developed by the Australian Army and disseminated via a range of adversary doctrine pamphlets. This process has created a variety of training adversaries over the period 1948 to 2018, most of which have rapidly become outdated. In most cases, the training adversaries developed by the Australian Army represented either opponents the Australian Army was actually fighting or generic opponents it was unlikely to fight. This meant that the Australian Army trained for operations against training adversaries it was unlikely to fight rather than preparing for probable future conflict.

In 2015 the US Army offered the DATE enterprise to the Australian Army. DATE provides a sophisticated operating environment and training adversary construct which is continuously updated to reflect current real-world operations. The adoption of DATE will transform Australian Army training by providing a contemporary, reality-based training adversary, allowing the Australian Army to train for contemporary operations for the first time.

## About the Author

Lieutenant Colonel Jim Sinclair is an Army Reserve Intelligence Corps officer with particular interest in combat intelligence, tactics and military history. He authored LWP-G 7-5-5 Training Adversary, released in 2018. He was awarded an Honours Bachelor of Arts in modern history (University of Sydney, 1978), a Graduate Diploma of Librarianship (University of New South Wales, 1979), a Certificate of Competency as a Librarian (Library Council of New South Wales, 1990) and a Diploma of Intelligence and



Security Analysis (Army Registered Training Organisation, 2014). Lieutenant Colonel Sinclair was awarded a Chief of Army Bronze Commendation for his performance as Officer Commanding 2nd Division Intelligence Company (1996–1998). He is currently posted to Director General Reserves Forces Command (DGRES FORCOMD) and assists the Headquarters Forces Command Decisive Action Training Environment (DATE) Team. He retired from the New South Wales Public Service in October 2016 after nearly 37 years of service.

## Endnotes

- 1 Readers interested in Australian Army historical doctrine should access Army online historical doctrine at [http://drnet.defence.gov.au/ARMY/Doctrine-Online/Information/Pages/Historical Doctrine.aspx](http://drnet.defence.gov.au/ARMY/Doctrine-Online/Information/Pages/HistoricalDoctrine.aspx), as most of the training adversary doctrine referred to in this article can be found here.
- 2 It is interesting to note that one of the major reasons behind the decision to adopt the DATE enterprise was the fact that the use of DATE enhanced interoperability across the ABCA partners.
- 3 Australian Military Forces, 1951, Notes on the Chinese Communist Army, Melbourne: Army Headquarters. This is the first Australian-developed adversary doctrine which I can identify in the post-1948 period. For details regarding Australian adversary doctrine, see Michael O'Brien, 2004, *Australian Army Tactical and Instructional Pamphlets: A Bibliography*, Australian Army.
- 4 The tactics described were reconnaissance, attack, night attack, defence, supporting fire, noise, deception and propaganda.
- 5 Directorate of Military Training, 1954, AHQ, *The Soviet Army*, Australian Military Forces: Study Précis, Book 8, Seymour, Victoria: School of Tactics and Administration
- 6 Three pages were devoted to the attack and three pages were devoted to the defence.
- 7 Australian Army, 1961, *The Phantom Army* (Provisional), Canberra: Army Headquarters
- 8 This date has been chosen because the last Musorian-derived adversary doctrine (*LWP-G 7-5-5 Training Adversary*) was completed in October 2016.
- 9 The term 'hybrid threat' will be used throughout this article. A hybrid threat is defined as a diverse and dynamic combination of regular forces, irregular forces, terrorist forces and/or criminal elements unified to achieve mutually benefiting outcomes.
- 10 Australian Army, 1961, p 5
- 11 M. C. J. Welburn, 1994, *The Development of Australian Army Doctrine, 1945-1964*, Australian National University, p 53
- 12 Australian Army, 1961
- 13 Australian Military Forces, 1964, Military Board, *The Enemy*, Canberra: Army Headquarters
- 14 Australian Military Forces, 1966, *The Indonesian Army 1966* (Canberra: Army Headquarters
- 15 Australian Army, 1970, *The Enemy, Parts 1 and 2*, Canberra: Army Headquarters
- 16 During this period the Australian Army sent a contingent of 151 personnel to Rhodesia/ Zimbabwe in 1979.
- 17 Australian Army, 1972, *Training Information Bulletin Number 26: The Enemy*, Sydney: Headquarters Training Command
- 18 This doctrine referenced a number of ABCA pamphlets, including:
  - US Department of the Army, 1977, *Opposing Forces Europe (FM 30-102)*, Nov
  - UK Department of Defence, 1972, *Notes on the Soviet Ground Forces*, Jan
  - UK Department of Defence, 1975, *Tactics of the Soviet Ground Forces*, Aug

The author recalls that the enemy tactical training he received at the Officer Cadet Training Unit (OCTU) located in Ingleburn in 1983 was based on *Notes on the Soviet Ground Forces*. The Chief Instructor at this OCTU was Lieutenant Colonel T J Smith MBE—a former member of the Australian Army Training Team Vietnam and author of *Training the Bodes: Australian Army Advisers Training Cambodian Infantry Battalions—A Postscript to the Vietnam War*, Newport, NSW: Big Sky Publishing Pty Ltd, 2011

- 19 Australian Army, 1997, *The Musorian Armed Forces Army Trial Doctrine 4.2 Edition 1 Version 1 Aide-Memoire*, Commonwealth of Australia; and Australian Army, 1997, *The Musorian Armed Forces Army Trial Doctrine 4.3, Edition 1; Land Operations, Tactics, Techniques and Procedures, Part 1*, Commonwealth of Australia
- 20 Australian Army, 1980, *Manual of Land Warfare, Part Three, Volume 2, Pamphlet No 2: The Musorian Armed Forces, Part 5: Aide-Memoire*, Canberra: Army Headquarters
- 21 These comments are based upon the experiences of the author, who attempted to use *MLW 3-2-2 The Musorian Armed Forces Part 5 Aide-Memoire*, 1980, during the mid-1980s.
- 22 Australian Government, 1987, *The Defence of Australia 1987*, Canberra: Commonwealth of Australia
- 23 The Kamarian Armed Forces were colloquially referred to as the 'Thugs in Thongs'.
- 24 Australian Army, 1991, *MLW 3.2.3 Kamarian Armed Forces*, Canberra, Army Headquarters
- 25 Australian Army, 1993, *Manual of Land Warfare, Part Three: Training, Volume 2: Training for War, Pamphlet No 3: Kamarian Armed Forces*, Canberra: Army Headquarters
- 26 Australian Army, 1997, *The Musorian Armed Forces Army Trial Doctrine 4.2, Edition 1, Version 1: Aide-Memoire*, Headquarters Training Command; Australian Army, 1997, *The Musorian Armed Forces Army Trial Doctrine 4.3, Edition 1, Land Operations, Tactics, Techniques and Procedures, Part 1*, Headquarters Training Command
- 27 Generic adversary training doctrine based on the Musorian Armed Forces continued to be released in a two-volume format until *LWP-G 7-5-5 Training Adversary* was written in 2016.
- 28 During the period from 1988 to 1999 the Australian Army deployed forces to Iran and Iraq (1988–1999), Namibia (1989), Pakistan and Afghanistan (1989–1993), First Gulf War (1990–1991), Western Sahara (1991–1994), Cambodia (1991–1997), Somalia (1992–1994), Yugoslavia (1994–2004), Rwanda (1994–1995) and Bougainville (1994–2003).
- 29 Australian Army, 2001, *LWD 7-5-2 Musorian Armed Forces—Aide-Memoire (Developing Doctrine)*, Combined Arms Training and Development Centre
- 30 Australian Army, 2001, *LWD 7-5-3 Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures (Developing Doctrine)*, Land Warfare Development Centre
- 31 Australian Army, 2010, *LWP-G 7-5-2, Musorian Armed Forces—Land Operations, Tactics, Techniques and Procedures, Developing Doctrine*, Defence Intelligence Training Centre
- 32 Australian Army, 2008, *LWD 7-5-3 Doctrine Note 1—Non-military Forces and Organisations—Operational Models*, Land Warfare Centre
- 33 This doctrine may never have been released. It was not listed as current doctrine when *LWP-G 7-5-5 Training Adversary* was being written in 2016.

- 34 *LWP-G 7-5-5 Training Adversary* received sponsor clearance on 3 May 2018. The pamphlet was reclassified from 'For Official Use Only' to 'Unclassified' in order to make it easier to access electronically.
- 35 The author sought to return to the structure of *MLW 3-2-2 The Musorian Armed Forces* (1980) when writing *LWP-G 7-5-5 Training Adversary*. A conscious effort was made to reduce the size of the doctrine in order to return to a single-volume format.
- 36 Chief of Army Minute, *ADF Joint Exercise Operating Environment (JEOE)*, 19 December 2014
- 37 Brigadier Mick Ryan, 2016, *The Ryan Review: A Study of Army's Education, Training and Doctrine Needs for the Future*, Commonwealth of Australia
- 38 DATE-P will be set in the Philippines and will be used by the Australian Army for collective training. Individual training will be conducted in the digital terrain of the Caucasus.
- 39 PMESIPT: Political, Military, Economic, Social, Infrastructure, Information, Physical Environment, Time.
- 40 The DATE hybrid force is capable of gaining and exploiting relative technological overmatch, leveraging weapons of mass destruction, employing cyberspace and counter-space capabilities and conducting operations among populations, in cities and in complex terrain.
- 41 Unlike the 'home-grown' generic adversaries, DATE does not currently provide the detailed tactical data which may be required to enable the delivery of high-fidelity virtual simulation. The tactical data which may be required includes frontages and depths of objectives, length of tactical march columns, rates of advance and indicative timings for battle procedure (eg, time required to mount an attack, defend a position etc.).
- 42 The attributes of information warfare employed by the DATE OPFOR include deception, electronic warfare, perception management, computer warfare, information attack and physical destruction.
- 43 The Marcellan ORBAT for Exercise Hamel 18 was based upon the Arianian 25th Infantry Division (APC). The Joint Exercise Operating Environment (JEOE) provided the operating environment.



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# In Their Steps: The ADF and Camels

**Captain James Barrett**

## **Abstract**

Conflict in arid and austere environments presents many challenges for sustaining a deployed force over long distances. The Australian Defence Force (ADF) has a long and continuous history of working with animals, all providing companionship and support in the harsh working environment; and, by fate, we are custodians of the last great herd of wild camels. The reintroduction of animal transportation may present opportunities for innovative patrolling and transportation options for our Indigenous service personnel and their communities, the broader Army and our international commitments in inhospitable environments. The very nature of this capability may also interest the Special Forces or Regional Force Surveillance Units. For less than the cost of one fully equipped Hawkei vehicle,<sup>1</sup> a troop-sized capability could be raised and sustained for nearly a decade.

## **Introduction**

The topic of renewed animal transportation was first raised by United States Marine Corps (USMC) infantry Captain Jason Topshe in 2016.<sup>2</sup> This influenced USMC logistics Captain Michael Chandler to write an Afghan-focused article entitled 'Let's Do Camels'.<sup>3</sup> This article logically discussed

the potential employment of camels for company-and-below tactical distribution. As much as this may sound ridiculous when the Afghanistan threat environment is considered, there are limited opportunities that may actually work when integrated with the local security umbrella and transport battle rhythm. Chandler identified that the use of pack animals, unlike vehicles, allows an army to 'break track', enhance route creativity, reduce predictability and present combat service support as a harder target.

The fact that Australia has the world's last great herd of wild camels, albeit feral ones, in the world reminds us of this concept and prompts the question why we should not consider our options. Further reading identified many challenges to this concept and also the complementary commercial opportunities that have been taken up across the nation.

After discussions with various ADF and community members on this topic during 2017–18, I was motivated to pose the question: should we consider camel transport as a future option?

### **History of Camels in Australia**

Camels were first brought to South Australia in 1840, but it was not until the Burke and Wills expedition 20 years later that they were successfully introduced in Victoria. It was recommended, correctly, that trained handlers should accompany the animals, and thus contracted Muslim cameleers from British territories, including modern-day Afghanistan, Pakistan and India were introduced. These men assisted with opening up the Australian inland through exploration and surveying, and within a generation they were themselves running profitable camel trains as the primary transportation means throughout the inland. They were at times in direct competition with European bullock teams but were considered reliable and trustworthy men who were generally respected. Once roads and rail were introduced, the camel trains experienced competition and most cameleers either returned home or were not allowed to re-enter Australia due to the *Immigration Restriction Act 1901*.<sup>4</sup>

The 1920s saw the overland networks, along with their studs and supply lines, superseded by mechanisation. As a reaction to the *Camels Destruction Act 1925* (SA),<sup>5</sup> the majority of camels were released into the wild, with a prayer from their Muslim handlers, lest they be wastefully shot as pests. However, such an intelligent and hardy animal merely followed its instincts and went inland to areas well away from the reach of the law

and rifle, where they multiplied. The knowledge that was possessed by the imported cameleers slowly faded as the remaining handlers themselves retired to their mosques and date palm compounds across the old transit routes of Australia<sup>6</sup> to live out their days as a way of life disappeared.<sup>7</sup> But not all knowledge was lost; many of the lessons taught to the Indigenous stockmen who worked alongside the cameleers lived on through their oral traditions and continued use of camels until the early 1970s. This was captured by early documentary makers,<sup>8</sup> and herein lies a link to the old ways.

Relations between pastoralists and camels have since largely been negative due to damage caused to fencing and competition for feed.<sup>9</sup> It is estimated that the wild camel population is currently up to 500,000 animals, despite periodic culls, based on potentially enhanced aerial counting surveys. This has resulted in a continued pastoral eradication program and government-sponsored destruction from aerial and vehicle-mounted shooters. The two areas of greatest concentration are the Simpson and Great Sandy deserts. However, despite the concerns about feral herds, commercial opportunities with camels are being exploited. Tourism, live export, abattoirs and dairies are all being developed as business models across the country. Indigenous communities in central Australia are directly involved, are benefiting, and bring a different perspective to the ethical management of this animal on their lands.

### **Australian Military Experiences of Animal Transportation**

After the evacuation of Gallipoli, forces were stationed in Tel el Kebir, Egypt, to refit and rearm while awaiting a likely deployment to the Western Front.<sup>10</sup> The Light Horse regiments were reunited with their mounts and prepared for desert operations, and their story is well known and celebrated. At the same time, volunteers were called for to establish the Australian camel units. Many men took the offer, and several battalions were formed within the Imperial Camel Corps (ICC) that would also continue the desert war against the Ottoman forces. Troops had four weeks training and succeeded, even though the standard of the day demanded five months.<sup>11</sup> It was their ability to quickly adapt to this new beast that allowed such a rapid establishment and force deployment. Most Australian men had a working knowledge of horses and other livestock from our predominately rural society, and this element of practical knowledge was inherent in about one-third of all volunteers.<sup>12</sup> The ICC embarked on a series of continuous operations



against a pro-Ottoman Senussi insurgency in the Western Desert oasis networks and opportunistic Bedouin raiders; and conducted battles against conventional Turkish–German Forces in the Sinai and Palestine.

The main advantage of this camel force was its ability to conduct longer, five-day desert patrols. This is where the camel proved itself to be a reliable and trusted supply vehicle. Where train, motor vehicle or horse could not go, the camel could. The camels pushed east across the Sinai to the Ottomans' vital Gaza–Beersheba communications line. Without the camels' ability to conduct wide flanking manoeuvres through the desert to cut off reinforcement and supply, the duration of the conflict, and potentially the fate of the war in Palestine, may have been different.

Since then, conflicts have continued to demand resourcefulness from the Australian soldier, and there is a need for a non-motorised support platform. Despite the effects of mechanisation, the precarious early battles of the World War II in New Guinea may not have ended in our favour if we did not have the support of both local human portage and our own pack animals along the Kokoda Track.<sup>13</sup>

At the same time, our commandos in Portuguese Timor<sup>14</sup> had guidance from their faithful 'criados', food and shelter from the local population and the trusted Timor pony<sup>15</sup> to do the heavy lifting in the mountains and valleys. Over 50 years later, when Australian forces returned to East Timor with InterFET, it was again the Timor pony that offered occasional support, along the high border tracks beyond vehicle range, taking vital supplies to observation posts and re-trans sites.

In the early days of the Afghanistan conflict,<sup>16</sup> the Special Forces again employed old wisdom to achieve a new mission. A team of donkeys with the names 'Simpson', 'Murphy', 'Roy' and 'HG'<sup>17</sup> were purchased and cared for by the troopers to carry gear up steep terrain not traversable by vehicles. They were invaluable to the troopers, because the beasts were naturally acclimatised to the high altitudes and workload by virtue of birth.<sup>18</sup>

### **Other Contemporary Experiences**

There are several nations that still have an active animal transportation element. Typically, these nations have high mountain ranges with limited or restricted terrain and have animals that are suited to the load-bearing work of portage. Although different from Australia, there are common elements

of employment, interoperability, equipment and care that could present learning opportunities for the ADF.

The United States' military experiences have taught the importance of retaining lessons learnt while embracing new technology. The United States Army did have successful employment of camels for desert exploration in the pre-Civil-War years in the south-western United States. However, essentially a horse-and-mule organisation, the United States Army's Camel Corps (1856–1866) was experimental and was later disbanded. Presently, the USMC teaches pack animal techniques to prepare marines<sup>19</sup> and joint and allied forces for operations in mountainous, high-altitude and cold-weather environments through a 16-day animal packing course<sup>20</sup> held at the Mountain Warfare Training Centre in northern California.<sup>21</sup> This venue specialises in complex, compartmentalised terrain training: the doctrine employed is a refreshed version of *FM 3-05.213 Special Forces Use of Pack Animals*.<sup>22</sup>

The Indian Army model of animal transportation covers both steep mountain passes and expansive desert regions. However, the high-altitude operations are not assessed as pertinent to our experience but should be considered as a case study that could generate an engagement opportunity. Their robust Staff Officers' Aide Memoire, which considers issues such as endurance, feed type, distances, altitude limitations, route planning and load composition, may help in humanitarian and disaster relief planning for future missions in areas affected by earthquake, landslide or flood where road and air options are not available.

## Australian Doctrine, Training and Employment

The Australian Army<sup>23</sup> does not have current doctrine to support animal transportation. The ICC Training Manual (*Camel Corps Training: Provisional 1913*)<sup>24</sup> provides an excellent basis for understanding animal transportation considerations, and the hard-won lessons and knowledge contained are as important today as they were in the Great War. The Australian Army Royal Australian Corps of Transport *Animal Transport Portage and Labour* (1974)<sup>25</sup> is another legacy document that outlines all requirements. As the portage ability of animals has not advanced since this publication was written, it should still be considered relevant. A review to ensure metric tables and current support platforms (that is, aircraft and vehicle types)

could confirm its relevance, noting air transportation options are included within existing Royal Australian Air Force (RAAF) doctrine. A consolidated document could then be considered alongside contemporary international doctrine to develop an ADF animal transportation and employment publication robust enough for domestic, deployed and partnered operations.

Our present experience with camels is limited to 26 Transport Squadron<sup>26</sup> at RAAF Amberley. The squadron has two unit mascot camels, and the assigned handlers participate in a familiarisation course. This course may form an entry-level option to be incorporated into any broader training concept. There are several commercial training packages for camel handling available within Australia. These may be a starting point and could be evaluated to assess suitability for the Department of Defence (Defence) and cross-levelling of qualifications into our training structure.<sup>27</sup>

The duration of training and annual employment would be dictated by several factors, including weather, season, facilities, availability of instructing personnel and trainees, and the camels themselves. Particular attention must be given to the maturity and hormonal cycle of the animals, and this may significantly influence training. If male camels are 'in heat' or 'rut', it will affect their ability to perform within a training environment. Indigenous and veterinary advice may determine that actual employment is a seasonal activity, but the care and maintenance of the camels is a year-round program. As ruminant animals, the camels would require large amounts of bulky food and the opportunity to naturally forage. Those who run holding yards and paddock facilities will also need to consider the sourcing of stock, fresh feed, posted or attached personnel, and existing infrastructure for mission success.

The most significant requirement for camels would be veterinary support. In the Great War the Army had 120 veterinarians, but the effects of mechanisation have seen the Australian Army Veterinary Corps (1909–1946) disbanded and the capability later reduced to just two professionals. However, on 1 January 2018, Army Veterinary Health<sup>28</sup> was expanded to 17 positions, to be led by a Staff Officer Grade One Veterinary Health.

## Ethical Considerations

At the end of the World War I, the disposal of 135,000 Australian horses—but not camels, which were sourced locally—resulted in significant emotional damage to the veterans of the desert campaigns. Many men were reluctant to see their mounts sold into a life of known hardship and neglect. If we are to employ animal transportation, can we establish practices that meet the expectations of our 21st century Australian society?

Careful consideration would need to be given before animals are taken outside of Australia. The return to Australia of our animals would be a mandatory expectation. Therefore, veterinary and logistical advice would need to be factored into planning. As part of a desktop exercise, quarantine stations on external territories or in isolated locations to meet Australian quarantine obligations may need to be identified, designated on seasonal or permanent standby, and reconnoitred once an activity utilising camels was authorised.

## Cost Comparison Between Animals and Vehicles

Current Australian doctrine—notably, *LWD 5-1-2 Staff Officers' Aide Memoire*, dated 4 October 2010, and *LWP-G 0-5-2 Interim*, dated 24 January 2018<sup>29</sup>—makes no provision for calculating animal portage. Essentially, as an organisation we have moved forward with technology and mechanisation, discarding animal transportation as a concept. Therefore, it is difficult to make an accurate cost–benefit analysis.

However, the basic principles apply: there will be no refined fuel but, instead, water, fodder, stabling infrastructure and specialised veterinary support. This will contrast with the cost of refined fuel, servicing and parts, and specialised mechanical training in addition to the original purchase price of the vehicle. The use of camels as a transportation option is assessed to be less expensive than dedicated Defence assets in the same location and along the same permissive routes.

Chandler documented<sup>30</sup> that the actual cost realisation is even greater when modelled against a deployed semi-permissive scenario. Fuel is an expensive and delicate requirement regardless of which logistic corridor it utilises. Chandler wrote that the JP-8 fuel type for the US-preferred OshKosh M1075 Palletised Loading System (PLS) will fill the 100-gallon (roughly 380-litre)

tank and provide a 300-mile (roughly 482-kilometre) range. The cost to transport JP-8 fuel brought in overland from Europe<sup>31</sup> for the North Atlantic Treaty Organization (NATO) mission in Afghanistan is US\$400 per gallon at the refuelling point in-theatre, which means a full tank for this vehicle type is currently US\$40,000. The current Afghanistan scenario has United States forces moving supplies at US\$1,200 *per mile* (nearly AUD\$1,000 *per kilometre*).

Australia is fuelling at the same location and should eventually expect similar financial consequences. Land-locked deployments will always require significant financial outlay in order to maintain the required level of active patrolling and logistical support. A future cost comparison table for all vehicle types, once Land 121<sup>32</sup> is implemented, may answer this question. As this will probably be the last generation of purely combustion-engine vehicles for the ADF, consideration must be given to transitional fleet options. In a future rapid or 'shock' scenario, camel transportation may provide an interim or permanent solution that decision-makers will require and on which they will depend.



*An Australian Light Armoured Vehicle waits behind a camel train during a patrol through the Baluchi Valley, Southern Afghanistan. Image courtesy Department of Defence*

## Implementation Considerations

### Load-Bearing Equipment

Legacy doctrine, museum artefacts<sup>33</sup> and contemporary tourism provide Defence with a good understanding of the saddlery and load-bearing requirements of animal transportation. Within the weight ranges and design specifications developed in the Middle East during World War I, and by studying the cameleer loading techniques and load lists from Australia, a modern saddlery equipment interpretation can be developed based on material, function and durability. Advances in technology will allow lightweight equipment to be included within the load list that will assist patrol endurance, animal and soldier comfort, communications and mission variety, and effectiveness. Additionally, alternative power sourcing techniques, through solar panel generation and small wind turbine use, will reduce the need for consumable energy (that is, batteries) and increase the 'green footprint' and range of a patrol.

Within a load list could be included intelligence, surveillance and reconnaissance (ISR) equipment (mini-micro unmanned aerial vehicles (UAVs), et cetera) and general data collection equipment that would support a broader area familiarisation (water availability; route serviceability). Also, scientific surveys could be supported through data collection if appropriate to the mission and within the capacity of the team. Similar annual expeditions<sup>34</sup> are conducted domestically and may provide a model for partnered data collection.

### Basing Locations Within Australia

Unlike vehicles, the positioning and deployment of camels will be dependent on several factors: the animal and its support systems; and the suitability of the environment to its performance and comfort. This is largely a 'self-regulated' issue, and 90 years of running wild has allowed the camels to map out the most suitable areas of Australia for their employment. They are the dry desert regions of central Australia close to where the camel strings originally plied their trade. Animal transportation would be most successful in this region. Ironically, this may actually see the resurgence of old camel routes. The Anangu Pitjantjatjara Yankunytjatjara (APY) lands within South Australia would be the suggested location for a camel depot.

## **The Benefits to Army**

Such a program should not be developed purely to experiment with animal transportation. There is recruitment potential from within the local Indigenous community, an active connection with and maintenance of our military heritage, and a reconnection with inland Australia and our broader national history. However, adventurous training, as a team-based endurance activity, should be seen as a benefit: options could include celestial navigation, bush tucker, surveying and assessment, and jackeroo skills in handling livestock, roping and self-sufficiency. In time, this program may even be seen as a tool for selected service personnel to ‘decompress’, assisting our collective mental health. Unlike today, the diggers of World War I had many months of transit time before arriving home. In today’s society only the vast emptiness and silence of the desert can provide such an opportunity for a person to clear their mind.

## **Indigenous Australian Considerations**

The benefits of local Indigenous recruitment would be that young men and women would have the opportunity to reconnect with their country, reconnect with the shared cameleer heritage and generate skills that feed into the other business plans of their community: abattoirs, dairies and tourism. But beyond that there is the benefit of language—maintaining this military capability could be a bilingual undertaking. All training and communication could be achieved in the local language to give another living pathway for knowledge and story. In time there may even be options, including Indigenous communication and field craft. Also, by recruiting and working locally in a modified service structure, there may be better potential for the retention of Indigenous personnel who are serving their nation.

## **Regional Engagement Options**

Animal transportation could be seen as an alternative engagement opportunity. Regionally, our important military association with Timor Leste, as documented, goes back to World War I. The Timor pony helped our commandos at a critical time in our national history. If the ADF wished to further engage with the Timor Leste Defence Force (F-FDTL), a combined animal transportation activity could provide a practical opportunity. This would allow ADF members to formally understand the use of small ponies in mountainous environments and share with the Timorese our knowledge of camels in the desert. The activity could help to maintain our valued historical links to the Timorese people and nation, allow the Timorese to display their

own military heritage with the pony, and further develop our professional relationship as defence forces.

Beyond our engagement, there would be opportunity for the United States, New Zealand and Timor Leste<sup>35</sup> to share common learning in common terrain: joint participation at respective military exercises employing animal transportation.

### **United Nations Missions and the Australian Commitment to Peacekeeping**

The employment of camels by Dutch soldiers of the United Nations (UN) Mission in Eritrea and Ethiopia (UNMEE) (2000–2008)<sup>36</sup> was due to a deliberate restriction of fuel for mission vehicles: although practical for patrols, this was not deliberately planned and therefore did not have the logistical support required.

But what if the UN had a trained camel troop option for military observers that could be sustained independently regardless of fuel and vehicle issues?

Australia may be able to develop our camel transport capability into a regional training option for UN missions. Our inland military training areas are climatically similar to various Middle East and North African UN mission locations suitable for the employment of camels. Assigned forces could conduct relevant pre-deployment training via the ADF Peace Operations Training Centre (ADF POTC) in Canberra and then have practical instruction on the employment of camels as a UN observer/patrol transport option, similar to the UNMEE experience. Alternatively, a familiarisation module could be conducted locally for future consideration. Such a concept may enhance Australia's profile in the UN Department of Peacekeeping Operations, provide additional military engagement opportunities, and potentially support an ongoing mission with ADF involvement.

The other main regional UN training nation is the People's Republic of China (PRC), through the People's Liberation Army (PLA). As a nation, the PRC is committing a greater footprint to UN missions<sup>37</sup>—in particular, to Africa—so there might be scope to work together if camels were employed as a cost-efficient mode of transport for a landlocked UN peacekeeping mission such as in South Sudan.<sup>38</sup> As the ADF actively seeks positive engagement with the PLA, the UN may be the opportunity.



UN peacekeeping missions have seen a significant increase in deployments and expenses since the end of the Cold War. Focusing on the need to reduce costs and environmental pressures, the 2012 UN peacekeeping report *Greening the Blue Helmet*<sup>39</sup> identified that road vehicles generate 15 per cent of all carbon dioxide emissions. As the UN actively seeks mission-based carbon dioxide reductions and energy alternatives, such as solar panels<sup>40</sup> and electric cars,<sup>41</sup> future solutions may support an animal-based alternative.

## Proposed Structure of a Camel Transport Capability

A troop-sized element could be the starting point and, with local support and permission, be established in the APY lands of South Australia. Alternative locations may include the Kimberley region of Western Australia with similar Indigenous engagement considerations, and, finally, in vicinity of RAAF Amberley in south-east Queensland, as there are established camel dairies and camel expedition organisations within the region. This would allow initial training models to be developed in conjunction with industry leaders, formalised and documented within Defence, approved as doctrine and implemented as training.

## Conclusion

If you walk around the Melbourne Shrine of Remembrance you will see several sandstone reliefs of the Great War. One of these depicts an Australian Imperial Force (AIF) soldier, alert and mounted on his trusted camel. His Rising Sun hat badge holds the image of a camel that was unofficially created by the diggers in Egypt and his dress reveals that he served in the deserts of the Sinai and Palestine. However we have not heard as much of these men as those of the Light Horse that took Beersheba. At the beginning of this article, I asked if the ADF would consider the reintroduction of camel transport. Based on resources, we could, but is the motivation there to support such an undertaking?

As a mark of respect to old ways, but not to mimic them, a modern animal transportation capability could complement our transport, logistical and ISR platforms. This concept uses existing knowledge to maintain both our military heritage and Indigenous connections to alternative modes of

transport. Indigenous leaders could be engaged to test the level of interest in their communities, complement current business approaches to wild camels, and provide opportunity in their lands. This capability could be seen as a potential recruitment opportunity for Indigenous Australians to maintain traditional ways within a modified military structure and have relevance to place, potentially encouraging retention. An adventurous training model could also be developed to include team-building aspects. Finally, an endorsed version of an animal transportation system could be developed for the ADF POTC to consider, to be shared with UN partners and other countries as an option to support desert operations and peacekeeping missions.

The use of animal transportation is not just a legacy capability, but a readily available resource that is established in the Australian landscape. Such a resource may offer a cost-efficient alternative to current fuel-based transport options with a solution that is both valuable and adaptive. Camel teams may provide the Army with a different perspective on logistics and small team development and also provide another engagement opportunity for regional and UN partners. The 19th century Muslim cameleers brought to Australia knowledge and an animal that has stood the tests of time. Now, in the 21st century, the animal can again prove, beyond feral status, its worth to the nation and our ADF.

## **About the Author**

Captain James Barrett is an intelligence officer with an interest in military history—in particular, the Great War desert operations. He holds a Masters degree in Strategic Intelligence and qualifications in Aviation Management and Terrorism Studies, and he is currently serving as an instructor at the Defence Force School of Intelligence.

## Endnotes

- 1 Craig Duff, 2011, 'Hawkei Eyes Future ADF Role', *Herald Sun Cars Guide*, at: <https://www.carsguide.com.au/car-news/hawkei-eyes-future-adf-role-18849>
- 2 Jason Topshe, 2016 'Evolving the Marine Corps for Irregular Warfare', *Marine Corps Gazette*, at: <https://www.mca-marines.org/gazette/2016/01/evolving-marine-corps-irregular-warfare>
- 3 Michael Chandler, 2016, 'Let's Do Camels', *Small Wars Journal*, at: <http://smallwarsjournal.com/jrnl/art/coin-logistics-let%E2%80%99s-do-camels>
- 4 *Immigration Restriction Act 1901* (Cth), at: <https://www.legislation.gov.au/Details/C1901A00017>
- 5 *Camels Destruction Act 1925* (SA), at: <https://dspace.flinders.edu.au/xmlui/bitstream/handle/2328/24276/17041925.pdf?sequence=1&isAllowed=y>
- 6 Philip Jones and A Kenny, 2017, *Australia's Muslim Cameleers: Pioneers of the Inland 1860s to 1930s*, Adelaide: Wakefield Press, p 18
- 7 Lisa Pellegrino, 2017, 'Celebrating the Exotic History of Australia's Afghan Cameleers', *Overnights with Lisa Pellegrino*, 6 Feb, at: <https://www.abc.net.au/radio/programs/overnights/pamela-rajkowski-afghan-cameleers/8244298>
- 8 Roger Sandall, 1969, 'Camels and the Pitjantjara', DVD, *Australian Institute of Aboriginal and Torres Strait Islander Studies*, at: <https://aiatsis.gov.au/publications/products/camels-and-pitjantjara>
- 9 CamelScan, 2019, 'Sighting Map', *FeralScan*, at: <https://www.feralscan.org.au/camelscan/map.aspx>
- 10 Frank Reid, 1943, *The Fighting Cameleers*, Sydney: Angus and Robertson, p1
- 11 George F Langley and M Edmee, 1976, *Sand, Sweat and Camels: The Australian Companies of the ICC*, Kilmore: Lowden Publishing Co, p 47
- 12 C Adele, 2017, 'RUSIQ Celebrated ALH History of 100 Years Ago', *RUSI The Brisbane Line* 5, no 4, pp 3-4
- 13 T Fisher, 1942, 'Papua New Guinea, 'Men Leading Pack Horses and Mules Loaded With Supplies'', Photograph, Australian War Memorial, at: <https://www.awm.gov.au/collection/C10619>
- 14 C Wray, 1942, *Timor 1942*, Hawthorn, Victoria: Century Hutchinson Australia, 1st ed, p viii
- 15 D Parer, 1942, 'Australian Guerillas in Timor. Natives Lead a Pack Train of Timor Ponies', Photograph, Australian War Memorial, at: <https://www.awm.gov.au/collection/C33182>
- 16 Peter Churcher, 2002, 'Two SAS with Simpson the Donkey in the Australian Compound, Bagram, Afghanistan', Artwork, Australian War Memorial, at: <https://www.awm.gov.au/index.php/collection/C997415>
- 17 A Hill, 2005, *Animal Heroes: Moving True Stories of the Animals Alongside Australian Soldiers*, Australia: Penguin Books, 1st ed

- 18 Ron Marshall and J Marshall, 2014, 'Donkey Insertion', *Light Horse Art*, at: <http://www.lighthorseart.com.au/SAS-Donkey-Insertion.html>
- 19 Mike Markowitz, 2013, 'The Virtues of Stubbornness: Mules at War', *Defence Media Network*, at: <https://www.defensemедianetwork.com/stories/the-virtues-of-stubbornness-mules-at-war>
- 20 United States Marine Corps, 2019, 'Animal Packing Course', Marine Corps Mountain Warfare Training Centre, at: <https://www.29palms.marines.mil/mcmwtc/Staff/S-3-Operations-and-Training/Chief-Instructor/Mountain-Warfare-Formal-Schools/Animal-Packing-Course>
- 21 Robert Storm, 2013, 'Mountain Warfare Training Center Teaches Advanced Horsemanship', United States Marine Corps, at: <https://www.marsoc.marines.mil/News/News-Article-Display/Article/513766/mountain-warfare-training-center-teaches-advanced-horsemanship/>
- 22 US Army Doctrine, 2004, *FM 3-05.213 (FM 31-27) Special Forces Use of Pack Animals*, US Government, at: <https://fas.org/irp/doddir/army/fm3-05-213.pdf>
- 23 Madras Courier, 2017, 'Animals of the Indian Army', *Madras Courier*, 15 Sep, at: <https://madrascourier.com/insight/animals-of-the-indian-army/>
- 24 British Army Doctrine, 1913, *Camel Corps Training. Provisional*, London: HMSO, at: <https://www.greatwarforum.org/topic/252813-online-camel-corps-training-provisional-1913-manual/>
- 25 Australian Army, 1974, Royal Australian Corps of Transport, *Animal Transport Portage and Labour*, vol 7, pamphlet no 1
- 26 Josephine Gillespie, 2011, 'Mascot Makes its Mark on Students', *The Queensland Times*, 28 Apr, at: <https://www.qt.com.au/news/mascot-makes-its-mark-on-students-camel-ipswich/834904/>
- 27 K Wright, 2017, 'Cameleer Academy', *Camel Connection*, at: <http://australiancamels.com/camel-training/>
- 28 Australian Army Veterinary Health, 2018, at: <http://drnet/Army/DAH/Army-Veterinary-Health/Pages/Future-Developments.aspx>
- 29 Australian Army Doctrine, 2018, at: [http://drnet.defence.gov.au/Army/Doctrine-Online/Pages/LWP-G\\_0-5-2\\_Staff\\_Officers\\_Aide-Memoire.aspx](http://drnet.defence.gov.au/Army/Doctrine-Online/Pages/LWP-G_0-5-2_Staff_Officers_Aide-Memoire.aspx)
- 30 Chandler, 2016
- 31 Emma Graham-Harrison, 2011, 'Factbox: NATO Supply Routes into Afghanistan', *Reuters*, 27 Nov, at: <https://www.reuters.com/article/us-afghanistan-pakistan-isaf/factbox-nato-supply-routes-into-afghanistan-idUSTRE7AP0GV20111126>
- 32 Australian Army Land 121 Training Team, 2018, at: <http://drnet/Army/L121/Pages/Welcome.aspx>
- 33 Museum of Applied Arts and Sciences, 2015, 'Camel Pack Saddle, Nose Peg, Bell and Hobbles Used by Afghan Camel Drivers in South Australia, 1870–1900', Photograph, Museum of Applied Arts and Sciences, at: <https://maas.museum/app/uploads/sites/7/2015/02/00220685.jpg>
- 34 See Australian Desert Expeditions website, at: <http://www.desertexpeditions.org/home.html>

- 35 New Zealand Army, 2010, *Army News*, Issue 407, at: [www.army.mil.nz/downloads/pdf/army-news/16mar2010armynews407.pdf](http://www.army.mil.nz/downloads/pdf/army-news/16mar2010armynews407.pdf)
- 36 UN Security Council, 2008, *Special Report of the Secretary-General on the United Nations Mission in Ethiopia and Eritrea*, Report S/2008/145, 2008, at: <https://www.securitycouncilreport.org/un-documents/document/EE%20S2008145.php>
- 37 Minnie Chan, 2017, 'China to Play a Bigger Role in UNPKO', *South China Morning Post*, 20 Nov, at: <https://www.scmp.com/news/china/diplomacy-defence/article/2120754/chinese-troops-two-day-drill-prepare-peacekeeping>
- 38 See the United Nations Mission in South Sudan official website, at: <https://unmiss.unmissions.org/>
- 39 David Jensen and S Halle, 2012, *Greening the Blue Helmets*, Nairobi: United Nations Environment Programme, p 38, at: [https://operationalsupport.un.org/sites/default/files/unep\\_greening\\_blue\\_helmets\\_0.pdf](https://operationalsupport.un.org/sites/default/files/unep_greening_blue_helmets_0.pdf)
- 40 Jensen and Halle, 2012, p 38
- 41 Achim Steiner, 2009, *Moving Towards a Climate Neutral UN: The UN System's Footprint and Efforts to Reduce It*, France: United Nations Environment Programme, p 44, at: [https://www.icao.int/environmental-protection/Documents/CNUN\\_report\\_09.pdf](https://www.icao.int/environmental-protection/Documents/CNUN_report_09.pdf)

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# **Improved Methods for Transport and Preservation of DNA Samples for Victim Identification in a Military Environment**

**Flight Lieutenant Kirsty Wright, Commander  
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Chaseling**

## **Abstract**

Identification of military casualties resulting from a disaster or mass fatality event while deployed to an area of operations is facilitated by the Mortuary Affairs Forensic Response Team (Mortuary Affairs) using methodologies such as DNA, fingerprints and dental examination. These scientific methods have been successfully used in many civilian disasters to identify victims; however, military environments present extra logistical challenges that need consideration. Preservation of bone and soft tissue samples during transport is necessary to prevent degradation prior to DNA profiling. Currently Acu-Temp AX56L mobile battery-operated refrigerator/freezers are deployed as part of the Mortuary Affairs response, although the units are not practical for a rapid field response and transport from remote sites, including combat zones.



*An alternative DNA preservation method is required by the ADF to guarantee efficient warfare logistics support for victim identification suitable for any scenario involving military deaths. Image courtesy Department of Defence*

This article examines the constraints of the current DNA preservation method in a military context and suggests alternatives that may improve logistics support for response to military casualties. Three chemical preservatives were used on fresh and partially decomposed bone and muscle samples stored at 21°C, 45°C, 55°C and 65°C for one week. The samples were DNA profiled and found to be the same quality as those obtained from refrigerated samples. The preservatives are cheap and lightweight and meet user requirements for the Forensic Identification Equipment Immediate Response (fly-away) Kit and the Follow-on Response Kit.

## **Disaster Victim Identification**

Disaster victim identification (DVI) is the structured response to a single or mass casualty event caused by an accident, a natural disaster or a deliberate act to take lives. In a military context the events requiring a DVI response may involve deaths from land, aerial or naval warfare; deaths

in training accidents; response to humanitarian disasters; or situations where the government requires support for a civilian disaster. Government agencies worldwide have adopted the International Criminal Police Organisation (INTERPOL) *Disaster Victim Identification Guide*,<sup>1</sup> which outline processes incorporating scientific and investigative principles that are collectively applied to identify victims, who are then returned to loved ones. The nature of some disasters prevents visual identification, so proof of identity is achieved using the 'primary identifiers' — fingerprints, dental and DNA. A match between an ante-mortem (AM) record and a post-mortem (PM) record by any one of these methods may be accepted as sufficient evidence for identification. Property (such as jewellery, wallets and clothing), and physical evidence (such as scars, tattoos and medical implants) are 'secondary identifiers', which cannot be used solely to identify a victim. They can, however, target the use of primary identifiers and support identification.

A DVI operation consists of the recovery phase, the AM and PM phases, and the reconciliation and repatriation phases. The recovery phase involves the recording and collection of evidence and bodies from the disaster site once it is practical and safe. The recovered remains are transported to a mortuary facility, where any associated property is recorded and preserved, physical evidence and fingerprints are recovered, dental X-rays and examinations are performed, and DNA samples are collected (the PM phase). The AM phase comprises recording information about a missing person and collating the evidence that could be compared with PM evidence recovered from the remains. Investigators and scientific experts conduct the reconciliation phase, where AM and PM evidence is systematically compared. An identification report is prepared when a match is found that meets a specified threshold. This report is then reviewed independently against all other information pertaining to the case by an investigator in the reconciliation team. A reconciliation comparison report is then provided to an identification board—a group of experts who have the authority to make decisions on identification. The formal release and transfer of the body from the mortuary is known as the repatriation phase. INTERPOL DVI forms<sup>2</sup> (electronic or hard copy) are used throughout each phase to record information in a standardised approach that facilitates comparison of information.

While the DVI process outlined above is generally the same, each disaster may have its own characteristics and therefore requires a tailored response.



The Australian Defence Force (ADF) Joint Services Police Group has trained personnel who generally will be called upon to conduct the recovery phase in a military-assisted or combat DVI operation; however, particularly in a combat environment, body recovery may be conducted by other personnel. Fingerprints and dental methods are reliable, and often faster than DNA profiling, at achieving identification. When fingerprint and dental identification is not possible due to the condition of the remains, DNA is heavily relied upon as the only remaining primary identifier. The 2001 World Trade Centre (WTC) DVI operation posed issues due to the high impact forces of the planes, collapse of both buildings and the resulting inferno, all of which resulted in highly fragmented and co-mingled remains; and it was considered an 'open disaster', meaning authorities did not know exactly how many victims required identification. Open disasters often require more extensive recovery and PM phases to ensure all victims are accounted for. Considering the WTC attack was an open disaster, the nature of the attack and the high degree of body fragmentation, authorities directed the DVI operation to DNA test all remains recovered from the site, including pieces of tissue only centimetres in size. A total of 2,749 people were killed in the attack, but they were represented by over 20,000 PM samples. The recovery phase continued for months after the event, hindered by the slow removal of rubble, which was then sifted through by hand (twice) to find remains. The DNA testing laboratory was close to the recovery site. This reduced the logistics complexity for sample preservation and transport. Nonetheless, it highlights the potential volume of DNA samples arising from high-impact open disasters.

The 2002 Bali bombings was also an open disaster and involved a high degree of body fragmentation and some co-mingling. The combined attack resulted in 202 victims, representing 23 nationalities. Authorities decided that all remains should be tested for DNA; however, a suitable DNA laboratory was not available in Indonesia to conduct the analysis. The DNA samples were collected at the mortuary site in Bali and transported in polystyrene boxes packed with dry ice. A total of 1,046 PM DNA samples needed transportation from Bali to the Australian Federal Police laboratory in Canberra after the then Prime Minister, the Hon. John Howard MP, offered to sponsor DNA testing and all associated costs, regardless of victim nationality. The samples were sent to Australia in batches using commercial carriers and ADF assets which sufficiently preserved the DNA. Some extra consideration was needed to transport the dry ice by air given

its classification as dangerous goods—specifically, the samples must be packaged to allow release of carbon dioxide gas, and some carriers have a weight limit for carry-on and checked packages containing dry ice (Qantas currently allows only 2.5 kilograms per passenger).<sup>3</sup> This was one of the first examples where ADF assets were needed to transport DNA samples from an overseas DVI operation. While dry ice was readily available in this scenario, it is not expected in remote sites, and its transportation by air introduces logistical complexities.

The 2004 Boxing Day tsunami killed over 250,000 people in 13 countries. The DVI response in Phuket, Thailand, comprised scientists, police and support staff from over 40 nations. A total of 3,679 victims, representing 42 nationalities, required identification. Victims' bodies were not fragmented, limiting the number of DNA samples required for each victim to only one or two. The samples were primarily analysed in China, Sweden and Bosnia and Herzegovina, requiring multiple flights and ground transport transfers from Thailand. Germany, Australia and Great Britain also provided DNA testing early in the operation. The samples were stored in specimen jars sealed inside large polystyrene boxes cooled by ice bricks. The ice bricks needed replacement between certain transfers. This involved opening each sealed



*Royal Australian Navy sailor, Leading Seaman Imagery Specialist Jake Badior, documenting the damage in Palu following an earthquake and tsunami as part of Operation Indonesia Assist 2018. Image courtesy Department of Defence*

box, repacking it with frozen ice bricks and resealing it. Although this was an effective method, it increased the complexity of logistics and evidence continuity, which impacted on time and cost efficiencies.

While these are examples of civilian disasters, the ADF may need to respond to similar events that present in a military context, such as aviation and nautical disasters, deaths from improvised explosive devices and terrorist attacks. Deaths from hostile action may involve a high impact element leading to body fragmentation and possible co-mingling of remains. An extra challenge to the identification operation may present if remains of Australian service personnel are co-mingled with remains of victims from another nation, who may be civilians or part of allied or enemy forces. The logistical complexities of DNA sample transport and preservation may be compounded by the operating environments in modern combat zones and the potentially unique and more challenging disaster scenarios encountered by the ADF when compared with civilian DVI operations. The reduced access to permanent facilities, electricity and remote operating environments may hinder DNA sample preservation by mechanical refrigeration or ice. An alternative DNA preservation method is required by the ADF to guarantee efficient warfare logistics support for victim identification suitable for any scenario involving military deaths.

## **DNA Profiling and Sample Preservation**

DNA samples collected from a body during the PM phase of a disaster (civilian or military) preferably consist of either a section of bone (typically no more than five centimetres in length), a tooth, blood or a section of muscle (approximately five millimetres squared). The DNA is extracted from this sample in a forensic biology laboratory, and sections of the genome that are highly variable between individuals are analysed. The resulting DNA profile is compared with the DNA profile from the AM sample—typically a personal effect from the missing person (for example, a toothbrush) or DNA from close biological relatives (for example, parents and siblings). When all highly variable sections of the DNA are successfully profiled (for Australia at least 21 DNA segments), the chance of obtaining an identification when compared with an appropriate AM sample is almost guaranteed.

If the DNA segments of interest are damaged by decomposition, incineration or other adverse environmental factors (known as degradation), they

cannot be compared with the AM DNA profile. The chance of obtaining an identification decreases as the number of damaged DNA segments increases. DNA degradation may also occur if the samples are not preserved after removal from the body during the PM phase and during transport to the testing laboratory (typically by mechanical refrigeration or by ice to  $\sim 4^{\circ}\text{C}$ ). Without refrigeration, the DNA sample could degrade within hours in certain environments; therefore, continuous sample preservation from collection and during transport is essential. If the DNA samples degrade during transport, and dental and fingerprint evidence is unavailable, the body may have to be re-examined so another sample can be collected. This could delay victim identification for a number of weeks or prevent identification when a second sample is not available (in cases involving a high degree of fragmentation).

## **Logistical Factors and Operational Considerations**

The ADF responds to military personnel involved in a disaster event overseas while deployed to an area of operations. The ADF may also be called upon by the government to supplement a DVI response provided by other Australian agencies in a non-operational area (for example, the 2002 Bali bombings). A designated Forensic Response Team (FRT), part of an ADF Mortuary Affairs cell, responds by travelling from Australia to either an existing mortuary facility near the incident site or to construct a temporary mortuary. The FRT typically consists of a mortuary manager, a forensic pathologist, a forensic dentist, a fingerprint expert, a forensic biologist and a photographer, all of whom will perform the PM phase of the DVI operation. The number and type of personnel required will be assessed on a case-by-case basis, depending largely on the size of the incident.

Forensic Identification Equipment (FIE) is transferred from Australia to the mortuary site in an Immediate Response (fly-away) Kit, with a Follow-on Response Kit transported to sustain the response as required. The equipment includes a forensic identification suite (comprising autopsy instruments, a lighting system and DNA sample refrigeration), digital dental X-ray systems, X-ray equipment to ensure bodies are clear of unexploded ordnance, body bags, storage, computer equipment, photographic equipment and a temporary body storage unit. Ideally the mortuary and equipment should be set up within one to two hours of arrival by the FRT.

The FIE needs to be lightweight (capable of a two-person lift to a maximum of 32 kilograms), simple to use and maintain in harsh environments, available at short notice, reliable, capable of long-term storage and suitable for maintenance or replacement in isolated conditions. It must also be compact, robust and stable, and it must enable users to perform forensic identification procedures, including body preservation, examination, documentation and analysis of AM and PM evidence. The equipment may need to be transferred to a ship and must therefore be suitable for carrying through narrow corridors. It may also require transportation via helicopter, jackstay (flying fox), in a truck over rough roads and cross-country. It should be compact and light for air transportation by rotary and fixed-wing aircraft or to be underslung by helicopter and by rail as part of a freight load, and it should be suitable as checked luggage on commercial aircraft.

The DNA samples collected during the PM phase by the FRT need to be transported from the mortuary to a nominated laboratory in Australia. Sample preservation throughout this period is essential. The total time from mortuary to laboratory could range from hours to days depending on the location of the incident, transport available and other operational constraints, including those experienced in or near combat zones. Blood samples are preserved using Flinders Technology Associates (FTA) paper, which meets FIE requirements and which will continue to be used. The FTA paper fits inside a small envelope and preserves blood spotted onto chemically treated paper without the need for refrigeration for up to 14 years; however, it can only be used if blood is available from remains. Currently Acu-Temp® Hemacool AX56L mobile battery-operated refrigerator/freezers are used by the ADF to preserve DNA samples (all samples except blood); however, they do not meet the FIE user requirements. Typically, one unit is required for the Immediate Response (fly-away) Kit and two units are required for the Follow-on Response Kit. The unit weighs 65.9 kilograms empty and needs two people to carry it. Its external dimensions are 99.6 centimetres by 58.9 centimetres by 57.9 centimetres (length, width and height), and the payload dimensions are 45.7 centimetres by 35.6 centimetres by 33.0 centimetres squared (56 litres).<sup>4</sup> Battery life at a storage temperature of 2°C to 8°C is 14 hours at 43°C ambient temperature and 48 hours at 25°C ambient temperature, with auxiliary power including adaptors suitable for air carriers (12-30VDC input power and 100-250VAC power). The cost of each unit is approximately \$10,000, and they require regular maintenance.

The size and weight of the units, the small payload and reliance on limited battery life and electricity are the major constraints to using the Acu-Temp® Hemacool AX56L refrigerator/freezers for DNA sample preservation as part of an ADF disaster response strategy. The small payload limits the number of samples that can be transported (one unit may carry as few as 50 bone samples). In a high-impact disaster where fragmentation could be expected, one unit may carry only a fraction of the samples required. Additional units would therefore be required, further increasing the weight and size and exceeding the constraints of the FIE, thus increasing logistics complexity. If the number of casualties or degree of fragmentation is unknown and only one unit is deployed, the lack of preservation for samples exceeding the payload of one refrigerator/freezer unit would prevent shipment of additional DNA samples to Australia and significantly extend the DVI operation out of country, potentially delaying victim identification. A civilian disaster one of the authors worked on involved five victims on a light plane that crashed into a field, resulting in 140 samples that required DNA testing. If this same scenario presented in a military context, the number of victims may initially indicate that only one refrigerator/freezer unit is required; however, given the degree of fragmentation, it is likely that two or three units would be required to transport the DNA samples to Australia using the current ADF strategy. In this scenario, three full units would exceed 200 kilograms. Increasing the number of refrigerator/freezer units also limits the types of transportation options available (land, sea and air) that could provide the necessary auxiliary power when battery life is exceeded, creating further logistical issues. Often the degree of fragmentation may be unknown at the time of equipment deployment, so a scalable sample preservation method is needed.

The weight and size of the unit/s makes some transportation methods unviable, as they exceed the desired footprint of the FIE and consume most of the FRT's manpower in carrying requirements. The limited battery life may cause logistical challenges when auxiliary power is unavailable or when transport between the mortuary and an electricity source exceeds battery capabilities. There is also the risk of unit malfunction, which may then cause sample degradation if another refrigeration source is unavailable. In areas of operation with extreme heat conditions, the battery life will be severely reduced. In the Middle East, for example, temperatures may reach 53°C and, after fitting vehicles with armour, temperatures inside those vehicles would be expected to exceed outside temperatures. The tarmac or concrete

used on airfield aprons reflects heat and further multiplies the temperatures of vehicles on the ground; therefore, sample preservation is needed in environments that could reach or even exceed 60°C.

## Proposed Alternative DNA Preservation Strategy

Research has demonstrated that various chemicals can preserve DNA samples without refrigeration. These include ethanol, GenoFix™, TypiFix™, dimethyl sulfoxide (DMSO), DNA Genotek Tissue Stabilising Kit, Biomatrixa®, DNAgard, Lysis Storage and Transport buffer (LST), and sodium chloride (NaCl). A study by Sorensen et al. (2016)<sup>5</sup> reported preservation of skin and muscle at 35°C for up to three months. A search of current literature shows that the hottest temperature at which DNA samples were successfully preserved using chemical media was 37°C for 38 weeks.<sup>6</sup> The most important consideration when selecting a chemical for DNA preservation is that it consistently enables a DNA profile to be obtained from the sample. Other considerations include cost, weight, availability, shelf life, ease of preparation, health hazards, disposal requirements, and stability during transport. Using these criteria, DMSO, ethanol and NaCl were chosen as possible alternatives to refrigeration. Allen-Hall (2011)<sup>7</sup> found that each chemical preserved fresh human muscle at 35°C for one month. Szibor et al. (2008)<sup>8</sup> found that NaCl preserved muscle and skin at 37°C for 38 weeks, and Caputo et al. (2011)<sup>9</sup> found that NaCl preserved human muscle at room temperature (temperature not specified) for one year.

The cost per sample of each chemical is 6.5 cents for NaCl, 0.5 cents for ethanol and 0.9 cents for DMSO (in a two-millimetre collection tube). The weight of a standard bag of NaCl is five kilograms, and a 2.5-litre bottle of ethanol or of DMSO weighs less than three kilograms. The shelf life of NaCl and ethanol (undiluted) is three to five years, and for DMSO it is two years. There are negligible health risks when using each chemical, and they are all readily available and easy to prepare, with minimal equipment required. All chemicals are permissible to transport by air, with NaCl and DMSO not regulated as dangerous goods. Ethanol has dangerous goods restrictions for air travel. Commercial carriers require ethanol storage in leakproof containers or heat-sealed plastic bags packed in 30-millilitre quantities, with a limit of one litre for commercial flights (checked baggage or carry-on luggage).<sup>10</sup> The restricted ethanol volume of one litre is sufficient to preserve

hundreds of DNA samples and therefore remains a viable preservative for the FIE.

The chemicals seem promising as a replacement for refrigeration; however, their use to date has been for civilian medical and research applications, and their specifications may not meet military requirements. There is no research to demonstrate whether the chemicals would be suitable for the potentially extreme temperature conditions encountered by the ADF or whether they can preserve tissue with early signs of degradation (which may be expected in a disaster scenario). Therefore, these alternative preservation methods cannot be recommended to the ADF to replace the refrigerator/freezers unless research is conducted that specifically tests the chemicals in military environments.

## **Testing Preservatives at Extreme Temperatures for Military Applications**

The preservation capabilities of DMSO, ethanol (70 per cent) and NaCl were compared against refrigeration for muscle and bone samples. The three chemicals must be able to preserve the samples as well as refrigeration for them to be considered a suitable replacement. Preservation success was measured by DNA profiling each sample using 21 DNA segments and counting how many segments could be reported. Temperatures well above those previously reported for these chemicals were trialled to mimic potential ADF conditions. The temperatures used were 45°C, 55°C and 65°C, with 21°C included as a control to verify the chemicals were performing at standard conditions. It was hoped that the samples stored at 45°C would produce complete DNA profiles (21 out of 21 segments); however, muscle samples stored at 55°C and 65°C were not expected to preserve the DNA anywhere near as well as refrigeration.

Both fresh and decomposed bone and muscle were tested to determine if early stages of tissue decomposition affected the preservation process. A total of 78 muscle and 78 bone samples were collected from a single donor;<sup>11</sup> half of the samples were stored at 30°C for 48 hours to induce early stages of decomposition. Each sample was then preserved in one of the three chemicals for one week at one of the four temperatures nominated above in replicates of three. It was believed that one week would exceed the time required to transport samples from an overseas mortuary to Australia.





*The alternative DNA sample preservation strategy using a readily available chemical is suitable for use in a wider range of environmental conditions, including extreme temperatures and remote combat zones scenarios. Image courtesy Department of Defence*

Fresh and decomposed muscle and bone were also refrigerated ( $-4^{\circ}\text{C}$ ) and expected to provide complete DNA profiles.

The refrigerated samples produced complete DNA profiles as expected. The three chemicals preserved DNA samples (fresh and decomposed muscle and bone) as well as refrigeration at all temperatures tested. All samples produced DNA profiles without any signs of degradation, suggesting that they would be suitable for comparison against AM profiles. These results were largely unexpected, particularly for the muscle samples stored at  $55^{\circ}\text{C}$  and  $65^{\circ}\text{C}$  for one week. Such extreme conditions were expected to partially degrade the DNA at those temperatures. The surprising robustness of the preservatives at high temperatures (nearly double the temperature of previous experiments) looks encouraging for use across current and predicted areas of operation, but further research will be needed to validate the method. It was also encouraging that early stages of tissue decomposition did not affect the preservation process with any of the chemicals, further increasing the potential scope of use in an operational context.

## Conclusion

This research demonstrates that alternative DNA sample preservation strategies using readily available chemicals may be suitable replacements for refrigerator/freezer units, which are not appropriate for inclusion in the FIE for a DVI response. It is recommended that a further validation trial be conducted prior to operational implementation, with more samples subjected to further temperature variations and additional tissue decomposition methods. The three chemicals tested all meet the FIE user requirements, overcome previously discussed constraints, and offer significant logistical efficiencies. Table 1 below illustrates the cost and weight savings of the chemicals compared with the refrigerator/freezers and highlights the reduced logistics complexity of DNA sample transport when auxiliary power is not required and battery life is not a limiting factor. The chemicals are lightweight and can be readily deployed in the Immediate Response (fly-away) Kit in quantities sufficient for increased scalability if the degree of body fragmentation or number of victims are greater than expected. The chemicals are also readily available and do not require maintenance.

**Table 1. Efficiencies of an Alternative DNA Sample Preservation Strategy for a DVI Response**

Preservation method	NaCl	Ethanol	DMSO	Refrigerator/freezer (x2a)
Cost	6.5c / sample	0.53c / sample	0.96c / sample	\$20,000
Weight	5kg	<3kg (2.5L)	<3kg (2.5L)	>131.8kg
Shelf life	3–5 years	3–5 years	2 years	NA
Preservation without auxiliary power	> 1 week	> 1 week	> 1 week	48hrs (25°C <sub>b</sub> ) 14hrs (43°C <sub>b</sub> )

<sup>a</sup> Two units are required in the FIE kits. <sup>b</sup> Battery life at nominated ambient temperature.

This research has potential to remove an impediment to the ADF response to a disaster event and improve logistics support for identification of military casualties. The alternative DNA sample preservation strategy using a readily available chemical is suitable for use in a wider range of environmental conditions, including extreme temperatures and remote combat zones, and does not rely on battery or auxiliary power. Chemical preservatives could increase the range of transportation options compared with refrigerator/freezers and may also reduce the length of a DVI operation. This article is the result of research carried out with the assistance of an Army Research Scheme grant in 2016–17.

## About the Authors

Flight Lieutenant Kirsty Wright is a forensic biologist currently working with the RAAF No. 2 Expeditionary Health Squadron and the Unrecovered War Casualties—Army. She has been involved in numerous DVI operations, including the 2002 Bali bombings, the South-East Asian tsunami and civilian aviation disasters. Commander Mark Page is a dental officer with the Royal Australian Navy who completed his PhD in forensic odontology. He has been involved in several disaster response operations, including the Kerang rail disaster and the Victorian bushfires. He is currently posted as the Commanding Officer for Joint Health Unit Central New South Wales. Jasmine Connell is a PhD candidate at Griffith University specialising in forensic biology research for military applications. Adjunct Associate Professor Janet Chaseling is a forensic statistician with extensive involvement in forensic science research and case work for criminal and coronial courts.

## Endnotes

- 1 INTERPOL, 2017, *Disaster Victim Identification Guide*, Mar, at: <https://www.interpol.int/INTERPOL-expertise/Forensics/DVI-Pages/DVI-guide>
- 2 INTERPOL, 2017, 'DVI Forms', Mar, at: <https://www.interpol.int/INTERPOL-expertise/Forensics/DVI-Pages/Forms>
- 3 Qantas, 2017, 'Dangerous Goods', Apr, at: <https://www.qantas.com/travel/airlines/dangerous-goods/global/en#carbon-dioxide-solid-dry-ice>
- 4 CSafe Global, 2017, 'CSafe Global AX56L Product Sheet', Mar, at: [http://csafeglobal.com/wp-content/uploads/2016/06/CSafeGlobal-AX56L-Product-Sheet-6\\_03\\_16-web.pdf](http://csafeglobal.com/wp-content/uploads/2016/06/CSafeGlobal-AX56L-Product-Sheet-6_03_16-web.pdf)
- 5 A Sorensen, E Rahman, C Canela, D Gangitano and S Hughes-Stamm, 2016, 'Preservation and Rapid Purification of DNA from Decomposing Human Tissue Samples', *Forensic Science International: Genetics* Vol 25 pp 182-90
- 6 R Szibor, W Huckenbeck, W Thiel, D Krause and R Lessig, 'Thoughts for the Organisation of an Early Phase Response to Preserve Victim Identification Information After Mass Disasters', in M Prinz, A Carracedo, WR Mayr, N Morling, TJ Parsons, A Sajantila, R Scheithauer, H Schmitter and PM Schneider, 2007, 'DNA Commission of the International Society for Forensic Genetics (ISFG): Recommendations Regarding the Role of Forensic Genetics for Disaster Victim Identification (DVI)', *Forensic Science International: Genetics* Vol 177, pp e39–e42
- 7 A Allen-Hall, 2011, 'Preservation of Human Muscle in DVI Conditions Commonly Associated with Mass Disasters', Honours: University of Canberra, 2011
- 8 Szibor et al., 2008.
- 9 M Caputo, L Bosio and D Corach, 2011, 'Long-term Room Temperature Preservation of Corpse Soft Tissue: An Approach for Tissue Sample Storage', *Investigative Genetics* Vol 2 at: <https://doi.org/10.1186/2041-2223-2-17>
- 10 Virgin Australia, 2017, 'Dangerous Goods', Apr, at: <https://www.virginaustralia.com/au/en/plan/baggage/dangerous-goods/>
- 11 Acquired through the University of Technology Sydney Body Donation Program (UTS HREC, ETH15-0029).



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## Book Review

# Beyond Combat: Australian Military Activity Away from the Battlefield

Edited by Tristan Moss and Tom Richardson

New South Books, 2018, ISBN 9781742235905, 256pp

## Reviewed by Major Lee Hayward

It is not unreasonable to expect that a casual observer of Australian military history might form the opinion that the identity of the Australian Defence Force (ADF) has been built almost exclusively on the wars it has fought. This book provides some fascinating insights into the lives and experiences of ADF members away from the battlefield and serves as a reminder that Australian military activity has occurred, and continues to occur, beyond combat.

The book contains a delightful array of easily digestible, standalone chapters written across four broad themes: 'Managing Soldiers and Their Families'; 'Military Education'; 'Caring for the Soldiers'; and 'Remembrance and the Dead'. Within these four themes, the authors present unique perspectives on a range of topics, from the experiences of families posted overseas to a chapter on letters from Australian Army nurses during World War I. Each contribution reminds the reader that 'militaries are institutions, they are

collections of people, they have an effect on society, and in turn reflect some of the society they serve’.

For many of us, Anzac Day evokes an image of heroic soldiers fighting at Gallipoli, committing acts of bravery and immense sacrifice. Many a military historian (and Hollywood director) has been guilty of exploiting this imagery to market their work. The authors of this book do not attempt to glorify their subjects or create an illusion of heroism. This provides a welcome level of realism and allows the reader to develop their own opinions as to the contributions made by the subjects contained within the book.

In the first section, ‘Managing Soldiers and their Families’, Christina Twomey educates the reader on the complexity of balancing political and social sensitivities for those families living in garrisons overseas—no doubt a relatable experience for any ex-patriot community. This is followed by Shirlene Robinson and Noah Riseman’s deeply moving and informative accounts of the struggles of the LGBTIQ community to gain acceptance within the ADF, reflecting the challenges experienced by the broader community in contemporary Australian society.

Topical themes continue in the ‘Military Education’ section, in which Tristan Moss’s chapter on teaching the military in Papua New Guinea highlights how training and education of neighbouring militaries strengthens regional security architectures and contributes to a stable Indo-Pacific region. The section entitled ‘Caring for the Soldiers’ provides some captivating insights into the world of those who provide support to soldiers in combat, such as nurses and cooks. In doing so, it highlights the contribution of all those involved in the war effort, not just combatants, to the evolving identity of the ADF. This section also provides some raw imagery of life ‘on the frontline’ that is focused on disease, lice and malnutrition as much as it is on weapons and ammunition.

Finally, the theme turns to the legacy of the military environment in the section on ‘Remembrance and the Dead’. The varied subjects in this section describe the difficulties for the Royal Australian Air Force (RAAF) in locating and repatriating missing Australian airmen, the importance of turning naval vessels into museum pieces for a more complete understanding of famous naval battles, and the significance of Singapore as a case study for a nation with a military history despite a non-war-fighting past.

While lessons from the battlefield are vital for any military, this is not a book that concerns itself only with lessons learned from combat. This is a book that informs the reader about other military experiences that have been just as fundamental to the evolution of the identity of the ADF since its inception. I would recommend this book to anyone interested in developing a deeper understanding of the spectrum of activities a military must be prepared for mentally, emotionally and physically. By taking the opportunities to learn from all the lessons of military activity, the ADF can be better prepared for activities away from the battlefield into the future.

This book raises some interesting questions about what 'beyond combat' will look like in the future. It is worth noting that, throughout Australia's military history, wars have been identifiable and combat easily defined. Operations in what is commonly referred to as 'the information environment' are increasingly complex, and the line between war and peace is less clear. The idea of fighting in the information environment is a source of consternation among those whose conceptualisation of warfare does not extend beyond the idea of combat and acts of physical violence. We would well ask: how will fighting in the information environment, which is certainly beyond (traditional) combat, change the identity of the ADF in the future? Indeed, what will the next section of this book look like?





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## Book Review

# Command and Morale: The British Army on the Western Front 1914–1918

By Gary Sheffield

Pen and Sword, 2014, ISBN 9781781590218, 264pp

Reviewed by Brigadier Chris Roberts (Ret'd)  
AM, CSC

In *Command and Morale: The British Army on the Western Front 1914–1918*, the prolific Great War scholar Gary Sheffield delivers 13 essays on a range of subjects broadly concerned with the topics of the main title. Written between 1986 and 2014, all of the chapters, except one, have been published previously, with several being the fruits of presentations given at international military history conferences. Now we have them in one easily accessible volume.

As is to be expected from such a well-established and respected scholar, they are all of a high standard and offer new insights into each of the topics he considers. Much of what he reveals is as relevant to today's armies as it was a century ago, especially that dealing with officer–soldier relationships. Young officers would do well to read what Sheffield discerns from his research.

The book is presented in three parts, with two chapters in Part 1—Context; six chapters in Part 2—Command; and five chapters in Part 3—Morale. In Part 1 Sheffield addresses Britain and the British Empire, with the first chapter considering various issues such as perceptions during the latter half of the 20th century of the war's relevance to Britain and the dominions; the commitment made by the British Empire; and strategy, operations and tactics. The second chapter discusses the contribution of the British Empire in the context of coalition warfare. Part 2 looks at topics as disparate as the relationship between Haig and Rawlinson; the Australians during the Battle of Pozieres; Hubert Gough as an Army Commander; and the British Expeditionary Force (BEF) in 1917, including the effect of the learning process before and during the Battle of Arras and, finally, a consideration of the achievements of that process through the performance of British troops in 1918.

Part 3 considers the morale of the BEF through a couple of different lenses, commencing with an evaluation of British morale over the whole period of war, identifying the dips and causes for them at various stages of the conflict. We then delve into the subject through two studies of officer–soldier relationships—one an overview and the other from the experience of the 22nd Royal Fusiliers (Kensingtons), which had a remarkably enlightened approach. Next, we are offered new insights into the role and functions of the Military Police and, from their records, a new perspective on the so-called rout of Fifth Army in March 1918. The impact of the war on class relationships through the eyes of one upper middle class, Eton-educated officer rounds out this excellent series of articles.

Sheffield writes in a refreshing and unambiguous style, and one slips through each of the chapters easily. Underpinned by sound research, he lays a few hoary myths to rest and demonstrates that the issues he considers are far more complex than the simplistic approach and inaccurate perceptions some of the more populist authors would have us believe. For example, notwithstanding there were poor officers, overall, officer–soldier relationships in the BEF were much more homogenous and underpinned by genuine mutual respect. Similarly, although there were some low points, British morale remained relatively strong throughout the war, even during the March 1918 retreat, and attests to the strength of character and sheer staying power of the average British soldier and his officers. At the end of most

chapters, and for Part 3, he offers further reading of works published after the chapters themselves were written.

Command and Morale is clearly in the stable of rejecting the mythology that was served up in the mid 20th century: a perspective of the war that was based on shallow research, assumption, simplistic perceptions, ignorance and outright lies that have bedevilled and trivialised the history of the Great War in popular culture. Instead, through sound research Sheffield, along with many others, has gone to the primary sources and through considered analysis discerned what really occurred, good and bad. His views are balanced and convincing, and this is the strength of the book.

In a few instances, however, some may not agree with his views: for example, that the British Army did not have a devolved command culture before the war—*Combined Training, 1905 and Field Service Regulations, 1909* clearly show the British command philosophy prewar was the much the same as the oft-quoted German *auftragstaktik*. Nonetheless, these are minor quibbles and there is much here that is worth considering. In this reviewer's opinion, what Sheffield presents rests on sound footings. Not only does this book deserve to be on the shelves of those interested in understanding the BEF in its true context but also officer training institutions would do well by including several of these essays in their curriculum. The book is highly recommended.



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## Book Review

# Leadership Secrets of the Australian Army: Learn from the Best and Inspire Your Team to Great Results

By Brigadier Nicholas Jans (Ret'd) OAM

Allen and Unwin, 2018, ISBN 9781760631802, 208pp

## Reviewed by Dr Stephen Mugford

There are two kinds of leadership books.<sup>1</sup> The first deploys theoretical ideas and research in the socio-psychological sciences to understand and analyse the phenomenon; and the second focuses on gathering experiences and stories which a reader can appreciate and draw guidance from.

Nicholas Jans' book, based upon his long association with Army, his intellectual and applied work and his experience with the Black Saturday bushfires, falls into the second camp. While it does not ignore the literature, it treads lightly on that terrain, offering readable and interesting examples. If you wanted only one book on leadership to use as a guide, you would do pretty well if you chose this one. It is readable, sensible and engaging.

Jans' core argument rests on a trio of Rs—Representing (behaviour you expect to see), Relating (positively with team members) and Running the

team (to create intrinsic reward and produce extra effort.) Jans argues persuasively that these three are found throughout good Army work and translate well into broader spheres of life. Whether they are 'secrets' is a different question (although it makes a good book title), but the point that the trio merit continued attention is well made and offers sage advice to (for example) young officers.

For the reader who would dig deeper, two issues are worth considering. First, all discussions of leadership are internally conflicted: most argue that leadership is a process which produces willing effort over and above mere 'compliance', so a leader is a person who generates this effort. Thus, anyone may 'lead', and leadership and senior rank are not coterminous. Many writers then revert quickly to talking of the senior folk as leaders: note that Army 'senior leadership' is located somewhere around Colonel or Brigadier and above. Jans does better than many on this score but still tends to fall into this trap (notice the idea of 'your' team in the title.) Eliding senior rank and leadership is common in hierarchical organisations like Army. This is dangerous—it privileges stability and history over agility and the future. Facing a turbulent 21st century, this is not where Army needs to be. A more uncompromising definition of leadership combined with the sparing use of the word 'leader', avoiding it as a synonym for 'boss', would mitigate this problem.

Second, the current literature describes a variety of domains and skill sets which would enrich the discussion: analytically separating continuity leadership (professional/managerial excellence) from generative leadership (creating space for innovation and agility) and from enabling leadership (skills for balancing and integrating the first two) along with communication leadership (advanced skills for creating deep thinking, et cetera, well beyond the Joint Military Appreciation Process. The trio of Rs that Jans identifies traverses these, which is why the book is useful. But, for those who would go deeper, it would be worth considering these more sophisticated concepts.

## Endnotes

- 1 I should declare at the outset that I have known Nicholas Jans for over 40 years through varied connections, from ACT Rugby to co-authoring a book with him in the last few years.

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## Book Review

# The Last Battle: Endgame on the Western Front, 1918

By Peter Hart

Oxford University Press, 2018, ISBN 9780190872984, 464pp

Reviewed by Brigadier Chris Roberts (Ret'd)  
AM, CSC

In 2008 Peter Hart, oral historian at the Imperial War Museum, wrote *1918: A Very British Victory*, in which he covered the fighting throughout 1918 from a largely British and Commonwealth perspective. In his latest work, *The Last Battle: Endgame on the Western Front, 1918*, Hart returns to the last year of the war with both a shorter and a slightly broader focus: addressing the last six weeks of the Hundred Days through the lens of selected offensives across the Western Front.

To set the background, the initial chapter provides an overview of the situation prior to late September 1918, covering the principal political and military issues and a synopsis of the fighting from the German Offensives in Spring 1918 to the point where the Allies were poised to strike again on 26 September 1918. From there we get into the meat of the book, where Hart blends the operational and tactical narrative with large doses of personal accounts by participants. This is the trademark of his books, in which he



brings the history of the war alive with the human experience of events through the reflections, observations and thoughts of those who served, both Allied and German.

In the next nine chapters Hart weaves his cloth from the Argonne to Flanders, recounting Foch's strategy of sequenced attacks, switching assaults from one point to another in order to keep the Germans off balance and limit their ability to employ their reserves effectively. Stepping off in this account are the Americans in the Battle of the Meuse-Argonne, then the British and Canadians at the Canal du Nord followed by the British and Belgians at Ypres and Courtrai, before slipping south again for the breaching of the Hindenburg Line at the Saint Quentin Canal tunnel by the British Fourth Army, comprising the British III and IX Corps, the Australian Corps and the American II Corps. From there we follow the British and New Zealanders to and across the Selle River before a brief interlude (Chapter 8) in which Hart provides an outline of the international situation and the machinations of the Allied and the German politicians and High Commands as the latter sought desperately to rescue something from the debacle engulfing them and the former sought to press home their advantage.

Hart wraps up the final week of fighting, focusing first on the Americans on the Meuse and then on the British and New Zealanders at the Battle of the Sambre, before reaching the 'day of days' – 11 November 1918. Here is the reaction to news of the armistice, the last few hours of combat, the tragedy of the last deaths and the poignancy and relief that flows through the words of the survivors when they learned the dreadful ordeal was over. One wonders, however, what compelled Private Henry Gunther of the American 313th Infantry Regiment to charge a pair of German machine guns in the last minute of the war, against the explicit orders of his officers and with the Germans shouting and waving him away, to become, perhaps, the last American soldier killed in action. Hart rounds off his book with an 'Aftermath', giving us a glimpse of what followed: the occupation of the Rhine, the clearing of the battlefields and demobilisation.

As can be seen from the offensives Hart includes, this is largely an Anglo-American-German account, in which 'Anglo' also includes the Australians, Canadians and New Zealanders. Conspicuous by their absence in it, though, are the French, who also participated in the endgame. For their contribution English-speaking readers should turn to the works of Robert A. Doughty and Elizabeth Greenhalgh. Nonetheless, this does not diminish what Hart has delivered. His audience is the general public of the United

Kingdom, the United States, Australia, Canada and New Zealand—and he provides them with a lively, engaging and well-written story that flows from page to page. Once picked up, it will be hard to put down.

Hart is an accomplished historian displaying a sound knowledge of the war as well as its challenges and difficulties and the manner in which they were overcome. Like his other books, *The Last Battle: Endgame on the Western Front, 1918* embraces the human face of war within a largely operational narrative that is balanced and fair in its commentary and gives credit where credit is due. Readers will not be disappointed with his latest contribution to our understanding of both what occurred and the thoughts and experiences of those who participated—from the highest levels of command to the men in the ranks.



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## Book Review

# Guarding the Periphery: The Australian Army in Papua New Guinea, 1951–75

By Tristan Moss

Cambridge University Press, 2017, ISBN 9781108182638, 284pp

## Reviewed by Lieutenant Colonel Mark O'Neill

Dr Tristan Moss is currently a researcher on the Official Histories of Australian Operations in Iraq, Afghanistan and East Timor at the Australian War Memorial and an Adjunct Lecturer at the University of New South Wales, Canberra. He is also a previous winner of the C. E. W. Bean Prize for Military History. *Guarding the Periphery: The Australian Army in Papua New Guinea, 1951–75* is his first published book since completing his doctorate in the Strategic and Defence Studies Centre of the Bell School at the ANU in 2015.

Moss notes in his introductory chapter: 'It is a cliché when writing Australian military history to refer to the degree to which a particular battle, campaign, war or person has been neglected by historians.' Authors, publishers and literary agents inevitably make such assertions seeking the 'cachet of an untold story'—and the higher interest and book sales such a cachet is perceived to bring. Moss's book can rightly lay claim to contradicting the cliché.

In this book, Moss objectively and comprehensively explores the history of the Australian Army in Papua New Guinea (PNG) between 1951 and 1975, when PNG achieved independence. The book is well written and relies on a wide variety of excellent archival primary sources and an extensive array of oral history interviews with both Papua New Guineans and Australians. Moss's narrative takes an essentially linear historical course, with a diversion into social history in a chapter on the experiences of Australian soldiers and their families in PNG. This result is a clear, logical and coherent story of Australia's efforts to defend Australia by guarding PNG during the period as well as the contribution this effort made to the development of the military in the lead-up to independence and beyond.

A key strength of the book is its unflinching address of the 'good' and the 'bad' on both sides. This is done with objectivity and obvious respect, meaning that difficult subjects such as racial and cultural issues are able to be contextualised and evaluated and useful judgements offered.

For me, one of the principal attractions of the book was the insight into the Australian Army at that time that it offered, which was different from what I had previously understood. This is summed up in a quotation from the concluding chapter (and highlighted by former Governor-General Major General Michael Jeffery at the book's launch in 2017):

*The Australian Army during the period between 1951 and 1975 was not a force that existed only on the battlefields of South-East Asia, or that was composed entirely of Australians. Instead it was an institution with far wider and more complex responsibilities, one of which was the establishment and management of a force of Papua New Guineans and the eventual creation of an independent defence force.*

The then Chief of Army, Lieutenant General Angus Campbell, wrote in 2017 that, in publishing the *Australian Army History Series*, 'The Australian Army and Cambridge University Press are dedicated to exploring, analysing and understanding our nation's military history'. *Guarding the Periphery* makes a solid contribution to achieving this aim. It offers good insight into a little-known piece of the shared past of the Australian Army and PNG Defence Force and provides useful context for those working on furthering the trust and partnership between our forces today.

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## **Book Review**

# **From the Somme to Victory: The British Army's Experience on the Western Front 1916–1918**

**By Peter Simkins**

Pen and Sword, 2014, ISBN 9781781593127, 256pp

**Reviewed by Brigadier Chris Roberts (Ret'd)  
AM, CSC**

This excellent book contains eight essays previously written by the highly respected Professor Peter Simkins over the 15 years prior to 2014. He has revised and updated each essay with new material that has become available since they first appeared. In doing so, he tackles some of the myths, both old and recent, about the British Army on the Western Front, which he effectively demolishes based on sound research and erudite analysis—doing so using an understated and balanced approach. Simkins persuades with evidence, analysis and context rather than exhorts with shallow assumption.

Leading off are two very useful chapters concerned with aspects of the historiography of the war. The first addresses the more recent works of

historians since 1991 and especially the frontline experience; the second takes a longer view with an instructive discourse on the historiography of the 1916 Battle of the Somme, from the unit and official histories appearing at the end of the war to the academic studies based on archival research leading up to the eve of its centenary. Both are models of balance and thoughtful consideration and ought to be read by those wishing to grasp an understanding of the various schools of thought, why the 'Lions led by Donkeys' school was so bankrupt of historical research, and why the revisionists are on firmer ground and gaining the ascendancy amongst those with a strong interest in the war, if not the wider public.

Then follow five chapters covering a specific aspect or action on the Somme; three in 1916 and two in 1918. Dissecting the character, commanders and performance of the New Army divisions during the dreadful 1916 battle, Simkins demonstrates that many performed relatively well, refuting the assertions of historians touting a negative view. This is not to say that all did well—those with the lowest success rate were K4 New Army divisions largely composed of Pals battalions<sup>1</sup>—but he provides what some historians do not: the context in which they fought and compelling analysis of the evidence and data available.

This approach follows on in his succeeding four chapters: the 18th (Eastern) Division's capture of Thiepval in September 1916; an interesting study of a very gallant stand over eight days by an outnumbered group of New Army troops isolated in Frankfort Trench in November; the performance of the British divisions at the First and Second Battles of Villers-Bretonneux in April 1918; and the audacious and highly successful recapture of Thiepval and the Ancre heights in August 1918. The eighth and concluding chapter is a fine study of the 12th (Eastern) Division during the Hundred Days.

In all of these essays, Professor Simkins provides the necessary background and lead-up to the battles and the context in which they were fought; and shows conclusively that, while the 'learning curve' was uneven, British commanders and their troops quickly adapted after the very bloody nose of 1 July 1916. Above all, he highlights that many British officers at all levels

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1 Editor's note: The Pals battalions of World War I were specially constituted battalions of the British Army comprising men who had enlisted together in local recruiting drives based on the promise that they would be able to serve alongside their friends, neighbours and colleagues ('pals') rather than being arbitrarily allocated to battalions.

were fine, intelligent commanders who quickly sought answers to the awful problems facing them. In this respect, Simkins disputes the assertion of Tim Travers and Martin Samuels that British command and control was overly centralised. Indeed, most who have read Samuels' *Command or Control?* recognise it as a shallow and distorted study that cherrypicks examples, and not even fairly, to support a preconceived idea. Moreover, he simply gets wrong several examples used to shore up his contentions, demonstrating his lack of knowledge of the subject he feels competent to pronounce upon. In fact, British command philosophy as espoused in its doctrine prior to the war was very similar to that of the Germans—a point made very succinctly by the New Zealand historian Christopher Pugsley and one which Samuels ignores.

While Australian historians are quick to recount Villers-Bretonneux as an Australian victory, and Simkins graciously acknowledges the key role played by the 13th and 15th Australian Infantry brigades during the Second Battle, he refutes Monash's unfair and churlish criticism of the severely depleted and exhausted British units and rehabilitates and places in perspective the part they played alongside the Australians. Indeed, the 5th Australian Division paid them due credit at the end of the battle. In analysing the 12th (Eastern) Division during the Hundred Days, especially its commanders and leaders at all levels, Simkins disputes the views that are critical of the standards of junior leadership during the final stages of the war, using as evidence the success of the division and the exploits of its officers, non-commissioned officers and the boy recruits, who were the bulk of its strength. As a veteran with combat experience, this reviewer was left with nothing but admiration for what these men did. It is sad their story is not more widely told.

Written in a style that flows well and logically and is easily digestible, *From the Somme to Victory* is another welcome corrective to our knowledge of the British Army on the Western Front in 1916 and 1918. It is highly recommended for those who wish to understand the complexities of what the British Army faced rather than read the works of historians who simply seek to criticise.





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## **Call for submissions for the Spring edition of the Australian Army Journal**

Are you studying towards a post graduate degree? Have you written an essay which may be of interest to the wider Army community? The Australian Army Research Centre (AARC) is looking for well written, scholarly articles on topics related to Army, particularly the future of Army, for publishing in the Australian Army Journal.

The next edition of the Australian Army Journal will be published in the Spring of 2019. We welcome submissions which have well structured arguments, are in a readable style without too much military jargon, and which lead to logical conclusions or recommendations.

All submissions are initially assessed for suitability by the Managing Editor, then professionally reviewed with the reviewer's comments returned to the author for amendment. The articles are then recommended for publication by the Editorial Advisory Board and edited for publication. We cannot accept articles which have been published elsewhere or are currently under consideration for publication with another journal.

We welcome submissions at any time, and currently publish two themed and two general editions per year.

## Word length

- Journal articles should be between 3000 and 5000 words
- Book reviews can be any length up to 1000 words
- Opinion Pieces can be any length up to 2000 words
- Letters to the Editor are welcome

## Format/style guide

Formatting and style of submissions should be in accordance with the Australian Style Manual and the ADF Writing Manual, Chapter 22, Academic Writing. Articles must be presented as a Microsoft Word document using 1.5 line spacing, no paragraph numbers; and all references are to be automated as Oxford style endnotes, rather than Harvard style in-text referencing. An additional bibliography or references list is not required. Read previous editions to become familiar with the style.

## Article abstract

Please include an article abstract. The function of an abstract is to summarise the major aspects of a paper, but a good abstract should also encourage a reader to read the entire article! For this reason, it should be an engagingly written piece of prose and not simply a rewrite of the introduction in shorter form. It should be no longer than 200 words.

## Author biography

Your biography should be approximately 100 words and include a summary of your service and educational history.

Please send submissions to: [dflw.publications@defence.gov.au](mailto:dflw.publications@defence.gov.au)

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## **Call for submissions for the Australian Army Journal Occasional Paper Series**

Are you studying towards a post graduate degree or doctorate and are writing a thesis? Would your thesis be of interest to the wider Army and former Defence personnel who read treatises on military topics? The Australian Army Research Centre (AARC) is looking for well written, scholarly papers on topics related to Army, for publishing in the Army Occasional Paper series.

If you have written an article of original research, on a topic of military interest which would fit in one of the seven themes below, then AARC may be interested in publishing your work as an Army Occasional Paper.

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Formatting and style of submissions should be in accordance with the Australian Style Manual and the ADF Writing Manual, Chapter 22, Academic Writing. Articles must be presented as a Microsoft Word document using 1.5 line spacing, no paragraph numbers, and all references are to be automated as Oxford style endnotes, rather than Harvard style in-text referencing. A bibliography is required. Occasional Papers are expected to be in depth studies of the subject being researched and therefore should be between 8000 and 40,000 words.

## **Paper abstract**

A paper abstract should be included. The most immediate function of an abstract is to summarise the major aspects of a paper, but a good abstract should also encourage a reader to read the entire piece. For this reason, it should be an engagingly written piece of prose between 200 and 500 words and not simply a rewrite of the introduction in shorter form.

## **Author biography**

The biography should be approximately 100 words and include a summary of the author's service and educational history.

Please send submissions to: [\*\*dflw.publications@defence.gov.au\*\*](mailto:dflw.publications@defence.gov.au)

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