Australian Army Journal

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Australian Army Journal

FOR THE PROFESSION OF ARMS

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EDITORIAL

An issue that has always puzzled me has been the reluctance of Australian military officers, unlike their US counterparts, to actively engage in the intellectual debate concerning their profession. Many are willing to express their opinions in the mess on a Friday afternoon, or are forced to do so to a greater or lesser degree when writing essays during their time at Staff College or on other training courses. The 1st Armoured Regiment has a long tradition of requiring its officers to write essays that are presented as the annual Paratus Papers. But these efforts to pen one's thoughts are the exception rather than the rule and, as an organisation, we are poorer for it, not only for the amount of conceptual thought that lies fallow, but because it betrays a lack of understanding as to how contemporary debates can be shaped.

By eschewing the opportunity to use their experience to shape the debate by adding a practitioner's voice, those within the Army who have the ability to articulate arguments increase the risk of abandoning the intellectual field to external commentators or 'security academics'. It is only by giving voice to one's opinions based on operational experience, backed up by thorough research and written in an appropriate style, that these thoughts are likely to become part of the broader debate. The *Australian Army Journal* exists both as a professional journal and as a forum for debate about land warfare and issues that relate to it. As the operational tempo of the Army slows, there will be an even greater need for all ranks to examine the Army's role in contemporary and future warfare and to use their operational experience to inform debates on such issues.

This edition of the *Journal* features several examples of how that experience can be captured and exploited to both inform and stimulate debate. Three artillery captains have combined to argue their case for the employment of the Royal Australian Artillery in post-Afghanistan warfighting, while Lieutenant Tink has examined the tactical level nuances essential in any consideration of the platoon-level operations future infantry officers will be required to conduct.

The two other articles address capability issues. Mitch Ferry examines the current approach to targeting and posits a way of developing future targeting methodologies. Captain Mark Bali provides readers an insight into the availability of home-made explosives and the ways in which organic peroxides pose a threat both operationally overseas, but also potentially domestically as part of a terrorist's arsenal. A key speech delivered by Chief of Army in Hawaii recently on *Land Power in a Maritime Environment,* provides insights into a key topic in determining the future utility of the Army post-Afghanistan. Rounding off this edition are interviews conducted by Major Cameron James with Major General Ian Gordon, AO (retd) and Warrant Officer Peter Rosemond, CSC, OAM (retd), who discuss their own experiences of the Vietnam-era army and suggest valuable comparisons with the modern post-Afghanistan army.

Having spent the first part of this editorial exhorting people to write for the *Journal*, it seems that the next issue of the *Journal*, a themed edition on the issue of culture in the Army, promises to be a raging success if the number of submissions is anything to go by. It would be no exaggeration to say that it has been several years since there have been this many articles submitted for the *Journal*.

We understand that both the *Journal* and the other papers produced by the Land Warfare Studies Centre need to be more readily accessible to our audience and we are currently working hard to improve our web and social media presence. Once this project has been completed we hope that people will respond to this expanded capacity for conveying ideas and that the ideas themselves will be made more freely available. Finally, and on an optimistic note, there have been no deaths on operations since the last edition of the *Journal* was published and we very much hope that trend continues.

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INTERVIEW WITH MAJOR GENERAL IAN GORDON, AO (RETD)*

On the eve of the withdrawal of troops from Afghanistan, the *Australian Army Journal* completed a series of interviews with former senior leadership and senior soldiers to compare their observations on the withdrawal from Afghanistan with that of Vietnam. Former Deputy Chief of Army, Major General Ian Gordon, AO (retd), discusses what he regards as the challenges facing a modern army compared with those of over 30 years ago and begins with a description of the Vietnam-era army.

Major General Gordon: The Army then was very different to today's Army. It was relatively large and organised very differently. There were military districts in every state. Every military district had its own logistics organisation, personnel units, signals units, hospitals and headquarters. For example, a base like Watsonia in Melbourne where I was first posted had a headquarters and was commanded by a colonel. The colonel had his own military transport, maintenance, logistics and communications.

Each of our corps had its own headquarters and substantial staff. A significant amount of personnel management was done by the corps headquarters, not DOCM or SCMA. Overall, there was a substantial part of the Army not training in the field.

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* Interview conducted on behalf of the *AAJ* by Major Cameron James

Each of the services was almost completely independent. There were headquarters for operations, materiel and logistics. The services competed with one another for resources and attention. It was a complete distraction and the relationship between the services was poor. ADFA didn't exist. The Defence College didn't exist and we barely knew — or cared about — our counterparts from the other services.

This all had a massive effect on how the Army operated and how it recovered from Vietnam. Though I didn't serve in Vietnam, I had a sense from working with those who did that their service in Vietnam wasn't understood or valued. This made the Army quite defensive. I sensed there were massive inefficiencies and inertia.

AAJ: What was your first posting?

Major General Gordon: It was to 6 Signals Regiment in suburban Melbourne, which was responsible for the fixed communications network within Australia and internationally. The Signals Corps had stations in Melbourne, Sydney, Brisbane, Darwin, Perth, Adelaide and Tasmania. There were telegraphs switches serviced by transmitter and receiver stations and their massive antenna farms which passed operational and administrative communications. I was the troop commander of a receiver station outside Melbourne. Over the years that network has disappeared and today we would never dream of replicating the civil communications network.

AAJ: It must have been interesting trying to recruit someone into an organisation given the public perception of the Army in the post-Vietnam era.

Major General Gordon: Yes, there were problems with recruiting when I joined RMC in 1970. The Vietnam War was starting to become unpopular. RMC was graduating only 50 to 60 people. However there were then three officer training establishments, RMC, Portsea and Scheyville and the officer Cadet School at Portsea was graduating many more each year. I can't speak for the soldier intakes at the Recruit Training Battalion, though I was aware that, at the height of National Service, there had been other Recruit Training Battalions, including one at Puckapunyal.

AAJ: In the wake of the Vietnam War there was an increase in female involvement in the Army. Are there any lessons to be learnt from that era in terms of increasing the participation of women, especially with the recent removal of restriction in combat roles?

Major General Gordon: I sense that we will move through the change quite easily, as we did when the WRAAC Corps was abolished and females were integrated into the Army's corps.

AAJ: A recent paper by Lieutenant Colonel Cate McGregor 'An Army at Dusk: The Vietnam-era Army Comes Home', suggests that, up to the last decade of the 20th century, Army training was too focused on jungle training, that it was training for the last war rather than a future war. Do you agree with her observations?

Major General Gordon: Yes, and it is natural. The Army now has many officers and soldiers with exceptional and extraordinary experiences from operations in Afghanistan and Iraq. They will want to teach the next generation. It's what they know and that knowledge will become a part of the well of experience that will be a gift to future generations.

In addition, it's so hard to know what major operations we will become involved in next. In the years before the heavy increase in commitments to Iraq and Afghanistan there was a focus on individual soldier skills and professionalism, and we could do a lot worse than that. That's a terrific base for building up tactics and techniques for a specific type of operation.

AAJ: How did the Vietnam-era Army ensure that its people were intellectually prepared for the next war?

Major General Gordon: Intellectual preparation is a complex issue. My sense is that there was a lot being attempted in the 70s and 80s, but the Army was also focussed on dealing with the internal organisational and cultural issues. Still, we spent quite a lot of money sending officers and soldiers overseas to schools and universities.

I believe that intellectual preparation is more than education, degrees and qualifications. We need to have people wanting to explore the questions and issues of their profession day to day, as part of their belief that they are in a profession that demands they be on top every day, not just at the end of their course.

AAJ: As a peacetime army, how did Army promote or undertake training to maintain motivation for service in order to retain personnel. Did Army place a greater emphasis on adventurous training, sport, overseas postings/ attachments, regional engagements or other means? How do you keep professional soldiers engaged and motivated in the absence of warfare?

Major General Gordon: I think there is widespread concern for the Army after Afghanistan that there will be many who will have done what they joined to do and don't need to do it any more.

A lot of them will not be dissatisfied; they just want to do something else. Some people will always be looking for stability and new opportunities. This isn't a new

problem and it won't be fixed by sport or adventurous training. Industry will still throw the big, big dollars at our experienced and well-qualified people so the only thing that you can do to compete is give a great sense of pride and job satisfaction.

Most people will stay in the Army if they believe they are learning, developing and growing while making an important contribution. But it takes hard work and you have to be creative. Adventurous training, sport, vocational and leadership training are enablers to help achieve this, but it needs a lot more besides.

AAJ: How did Army deal with the wounded, injured and ill post-Vietnam? What was the policy for retaining wounded, injured and ill personnel? For how long did Army have to deal with both the physically and mentally wounded?

Major General Gordon: In my opinion the Army has never been all that good in this area. The unsolved problem is mental injury and I sense that after Vietnam the Army never properly understood and tackled this. Many of our people were afraid that by exposing a mental injury they would be medically downgraded and could lose their job, their livelihood. Has this changed? Can we change the culture so that mental injury is viewed as being as normal as a physical injury, and that it can respond to treatment so that most people can be returned to good health? I'd like to think so.

AAJ: The *Journal* recently spoke with Lieutenant General Frank Hickling who offered the comment that there is a major difference between lessons and observations and that a lesson requires a change to occur. If change doesn't occur then it's effectively an observation not a lesson.

Major General Gordon: I agree. We used to call the 'Centre for Lessons Learnt' the 'Centre for lessons written down'. The Army in the early 1970s wasn't really being forced or resourced to change. I suspect it was because there was no imperative to change. On top of that, the Army is often more scared of what it will lose from change than attracted by what it will gain from change.

AAJ: In periods of resource austerity, tough choices must be made. What are Army's non-negotiables?

Major General Gordon: Education and training are not negotiable and should not be sacrificed when times are tough. An Army must also maintain its respect. The Army respects the value of the knowledge and experience of lower ranks. Commanders respect their soldiers and soldiers respect their commanders. This respect gives us our edge and makes us what we are.

AAJ: On reflection what do you consider your biggest contributions to Army?

Major General Gordon: I think my biggest contribution was a result of some desperately tragic events — a suicide in my command and some deaths in training that led me to become deeply involved in Army Safety Program. It was at a time that Defence and the Army's Chief, Lieutenant General Peter Leahy, refused to accept these deaths and injuries as inevitable.

We explored some of the causes of bullying and the chains of events and account-abilities that needed to be fixed to break the chains of events that can lead to suicide. There was a lot that was changed, and it was partly technical, partly procedural and partly cultural.

It was the same for safety. We needed to change the Army's idea that suicides and accidents happen and that if you are not breaking guys in training then you are not training hard enough. In my last year as Training Commander and as the Deputy Chief, I helped Lieutenant General Leahy make these changes.

AAJ: Did you find that there was a culture of people telling you what you wanted to hear?

Major General Gordon: Absolutely. It's funny, but as a senior leader in Army I really valued somebody being brutally honest. Our 'can do' culture is a real strength but it can also be a real weakness.

AAJ: What is your fondest memory?

Major General Gordon: It was after about a year in East Timor as the Deputy Force Commander. I'd worked hard, served the UN, my commander and the people of East Timor as well as I could and I didn't waste a single moment. On my last day I was taken out to the airport by the Force Commander and my staff. As I climbed the stairs to the airplane and flew back to Darwin I didn't have a single regret.

I was lucky. The Army had given me the chance to do an important job well. I couldn't have asked for more than that.

MAJOR GENERAL IAN GORDON, AO

Major General Ian Gordon, AO graduated from the Royal Military College, Duntroon, in 1973 and was allocated to the Royal Australian Corps of Signals. He undertook a range of regimental and technical staff appointments and attended the Royal Military College of Science at Shrivenham, UK. He completed the Army Command and Staff College course at Queenscliff in 1985.

In 1990 Major General Gordon was posted to command the 1st Signals Regiment in Brisbane and in 1991 he commanded the first Australian contingent to serve with MINURSO, the UN Mission for a referendum in Western Sahara. For his service as CO of the 1st Signals Regiment and command of the first contingent for MINURSO he was awarded the AM.

Major General Gordon was Director of the Royal Australian Corps of Signals from 1993 until 1995 and in 1996 he attended the Australian College of Defence and Strategic Studies. In 1998 he was appointed Commandant of the Army Command and Staff College. In January 2000, Major General Gordon assumed the appointment of Director General Personnel – Army.

In September 2001, Major General Gordon was promoted to his current rank and posted to East Timor as the Deputy Commander, United Nations Transitional Authority in East Timor (UNTAET). He served in this appointment until September 2002 when he returned to Australia to take up the appointment as Commander, Training Command – Army. He assumed the appointment of Deputy Chief of the Army in May 2004. He was made an Officer of the Order of Australia on 26 January 2006 for his distinguished service to the Australian Defence Force in senior command and staff appointments.

In December 2006, Major General Gordon was seconded to the United Nations to serve as the Chief of Staff and Head of Mission of the United Nations Truce Supervision Organisation in Jerusalem.

Major General Gordon is married to Ula and they have three children. His hobbies include scuba diving, touch rugby, restoring cars, reading and bushwalking.

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INTERVIEW WITH WARRANT OFFICER PETER ROSEMOND, CSC, OAM (RETD)*

On the eve of the withdrawal of troops from Afghanistan, the *Australian Army Journal* completed a series of interviews with former senior leadership and senior soldiers to compare their observations on the Army post-Afghanistan with that of the post-Vietnam era. Former Regimental Sergeant Major (RSM) of the Army, Warrant Officer Peter Rosemond, CSC, OAM (retd) describes the Army as he knew it in the Vietnam era and comments on what he regards as the challenges facing the current army post-Afghanistan.

Warrant Officer Rosemond: I would like to [begin by explaining] where I fitted into the Army during and following Vietnam. I deployed to Vietnam in 1969 as a 19-year-old corporal. I commanded a tank for the best part of a year and upon return immediately started training for promotion to sergeant, scheduled to return to Vietnam.

At that time, the tank regiment had proven itself as a force worth maintaining, so in 1972/73 I had the privilege to trial the M60 and the Leopard tank for the Army. In the latter part of 1973 into 74 I began wondering how many years after the withdrawal from Vietnam I would go round and round the Puckapunyal range in a tank.

The Army changed its training system in 1974 from subjective to objective training. As a gunnery instructor I was additionally tasked to rewrite the gunnery

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syllabus including designing and enabling terminal objectives and allowing for retesting without extending the training time. This was in addition to instructing, so I was a busy young sergeant at 24 years old. During this same time I applied for a transfer to the Cavalry Regiment to broaden my armour experience so I came out of tanks and went to 2 Cav.

AAJ: So how would you describe the environment post-Vietnam? What was the situation Army faced in the period after the withdrawal? What sort of financial situation did Army face? What was the impact of the strategic guidance and discussions on the size of the force?

From a sergeant's perspective, strategically I knew what the regiment was doing and I knew in detail what the squadron was doing and my role within this, but in terms of the Army, Puckapunyal and the tank regiment were quite isolated. I wasn't seeing what was happening in the world of logistics and the other arms units. I did however know that units were moving and being amalgamated — the infantry went from nine battalions to six. It was about 1975 where I started to see the effect of this. At this time corporals and sergeants from the infantry were offered corps transfer and some came to the School of Armour to be retrained from being infantry section commanders and platoon sergeants to being crew commanders and troop sergeants. I know a lot of the guys who did this and I commend them for having the courage to step out of their developed world on this whole new challenge at rank. I think this was reasonably successful; some of those guys became RSMs.

AAJ: Did that create an 'us-versus-them' type of culture?

Warrant Officer Rosemond: No, there was nothing derogatory and they were treated no differently, they just fitted in.

AAJ: With that in mind, in the years following, were there any cultural issues, any divides between those who had and had not served in Vietnam and if so did this affect morale?

Warrant Officer Rosemond: Before Vietnam if I had hitchhiked in uniform along the Hume Highway near Seymour, one of the first three cars to pass would have offered me a lift. On my return had I have done it, one of the first three cars would have tried to run me over. I had some interesting experiences on my return. Soldiers were seen completely differently between 1968 and 1970, such had the community changed its view of the Army. This was an anti-Vietnam thing; enough has been said about the community taking its frustration out on the Army not the government. I think governments have learnt a lot from this as well as the

community. People now realise that it's not the Army's fault; the Army is just doing what it's tasked with.

AAJ: In another interview that was conducted recently with Warrant Officer Woods he commented that he came across people who were valued for the medals that they wore, not for their competence. Would you agree with this sentiment?

Warrant Officer Rosemond: I came across more of this in the later years, not at that time. In later years, say in the 80s, the Army started to say that being in Vietnam was irrelevant. I saw Vietnam as a journey of learning. In my opinion, active service is active service and it doesn't matter how long ago it was, your opinion should be heard. I agree that there were people in the 70s who lived their reputation. I would say the same to young people today, that it's a learning experience and that you should work as hard as you have to in order to be the best that you can be for tomorrow.

I guess that National Service has to be mentioned in this mix. I joined the Army in 1967 and the advertising at the time was to join the new, modern Army. To me it was the new, modern Army and I didn't understand the old Army. I joined the new, modern Army and it was really good. Now in this mix there were National Servicemen and they challenged through maturity, life experience and, I guess, their astuteness. In most cases, National Servicemen brought university, trade or work-related skills to the Army from the civilian world at a different level to the 17-year-old recruit who perhaps left school, did some work and joined the Army.

They challenged the Army's staid or fixed mindset on how things were done. There was a lack of flexibility and the National Servicemen got rid of that. The Army grew so quickly that it had to change. It had to do away with seniority; people were now being promoted on ability, not time in rank. In a post-Vietnam era, that legacy remained where people were selected on ability and suitability rather than seniority.

I had a lot of problems as a young sergeant; I was 21 and I often had comments from other sergeants that I was lacking something because I was so young. The responsibility was mine; I was young and had to prove to my peer group and corporals that I could do my job. I think the Army learnt a lot post-Vietnam, from it and from the legacy of the National Servicemen contributing in a way that they probably didn't realise, that changing dynamic.

I will just give you an idea of how National Servicemen changed the dynamic. A National Service tank driver was being micro-managed and told when to change the gears etcetera. The gear stick in a Centurion was a three-foot steel rod which links back to the gear box. This one fellow undid the bolts that hold it in place and, at the right moment, took the gear stick out, stepped out of the tank and gave the gear stick

to the crew commander, stepping off the side of the vehicle. The Crew Commander was on the vehicle, gear stick in hand doing five miles an hour stopping in a creek. This sent a message; National Servicemen were mature men who saw the world differently to the 17-year-old who was imbued with this 'do what you are told when you are told and grow with it' mentality. They didn't know any other way. Being a little older I was seeing both sides.

AAJ: In the wake of Vietnam, there was an increase in female involvement in the Army. Are there any lessons that can be learnt in increasing female participation, especially with the recent removal of restrictions in combat roles?

Warrant Officer Rosemond: Being in Armoured Corps there were no females in the regiments, but there were at the school as drivers and the like. Females and males are both soldiers; if you treat them like soldiers and respect them like soldiers then there is no issue. I don't care if there are females in every corps in any job in the Army. I actually feel that females have a role in Special Forces as a female in casual wear can walk into areas where fit, Special Forces-looking men can't. There's evidence from other countries, the Brits have had female special operators in Ireland. Train females from the bottom up and I think they will be successful, try to transfer them at middle rank and I think there will be real issues.

You look around armies of the world and there are females everywhere. You can't ignore 50 per cent of the population and disregard them because they are female; some women are a lot more capable than men.

I worked with a female sergeant when I was in Germany in the mid 70s who was a Centurion Commander in the Israeli Army during the Six Day War. I think females can be anywhere in the Army, but I do question if the public, the media and the government are ready for the first female who is a mother, wife, sister or daughter, to be taken prisoner or killed in combat action, not in support or an accident but as a direct result of combat.

AAJ: A recent paper by Lieutenant Colonel Cate McGregor 'An Army at Dusk: The Vietnam-era Army Comes Home', suggests that, up to the last decade of the 20th century, Army training was too focused on jungle training, that it was training for the last war rather than a future war. Do you agree with her observations?

Warrant Officer Rosemond: No, I worked at Portsea as a field training instructor. I don't think we were hanging onto Vietnam at all. I think we were teaching the doctrine requirement of commanders at every level on patrol in both open and close country. I didn't see that as what we did in Vietnam, I just saw that as conventional training at the doctrine level completing all processes through to

the delivery of orders and their implementation. By the time that I was at Portsea as a warrant officer in 1981 I think Vietnam was irrelevant; it was to what I was doing.

From an Armoured Corps point of view, pre-Vietnam we trained for conventional operations. We then modified our training pre-deployment to counter-revolutionary warfare (CRW). In 1969, the first half of that year was conventional operations, spread out [over] long distances, live firing, fire and manoeuvre to switching into a base camp called Nui Dat 2, where we then did CRW. We were no longer spread; we were line ahead, tracking one another. We did cordon and searches, using tanks in this role. Upon our return we went back to conventional training. We hated doing CRW as it was easy. We trained in doctrine-based conventional operations for the entire capacity of the force. So dropping back to do CRW was easy and something that we didn't seek.

I think this may be a challenge for the Army in that it will need to ensure that all learning is doctrine-based, not based on personal experience. Doctrine is the blueprint for how and what you do. It's too easy for people to say that they want to teach things their own way because their way is easier or what they did on operations. There are many examples I could provide you from my career where this has occurred and when we have gone back to doctrine-based training, the rate of accidents has significantly reduced. If there is an investigation it's doctrine that will be investigated, people need to understand that. I learnt that in the early 70s rewriting training for tank gunnery. It has to be doctrine, it has to be covering everything required and it has to be tested.

AAJ: As a commander you would have appreciated the requirement for the transition from CRW back to conventional operations. Did the soldiers appreciate why this was necessary?

Warrant Officer Rosemond: That came down to the leadership and focus; we were focussed on individual excellence and skills. This is where the Army needs to really look. If you look and teach what you did on the last operation mistakes get taught as not all practices required in one environment are required in another. Take silent cocking for example. When we transitioned to the Steyr there were a lot of UDs as there was a requirement to silent cock the SLR in the jungle on continuous operations in close proximity to the enemy. Trying to replicate this with a Steyr when conducting different operations resulted in a lot of UDs. This is where you learn how you train with the benefit of learning through doctrine.

AAJ: As a peacetime army, how did the Army promote or undertake training to maintain motivation for service in order to retain personnel? Can you describe

the exercises that you did? Did the Army place a greater emphasis on adventurous training, sport, overseas postings/ attachments, regional engagements or other methods?

Warrant Officer Rosemond: Resources were always tight, especially for my corps as tanks weren't seen as strategic priority one. In 1968 the notice for them to go to Vietnam was very short and repair parts and fuel were very hard to get, but ammunition seemed to always be in abundance. Post-Vietnam the ammunition was restricted and mileage allocation very tight. So much so, that an innovative unit commander at the 1st Armoured Regiment took my squadron off the Puckapunyal Range by borrowing a squadron's worth of M113 in order to change our training from creeping around the range. We went to Murrayville to train in the desert. It was a complete change of training focus and I guess a challenge to commanders. Pre-dating technology, navigating was a massive issue. Navigation skills in the desert, orientation and live firing were all put into practice. I guess there had to be a lot of innovation at the sub-unit/unit level even though there were resource restrictions to ensure that the training remained interesting.

AAJ: How was that received?

Warrant Officer Rosemond: Very well received because it was a challenge. We had to change from being tank crews to being M113 operators, it was stimulating training. We were however challenged in the 73/74 period with equipment and resource constraints being very tight. I recall doing dismounted training where we didn't have small arms blanks and yelling 'Bullets! Bullets!' — the soldiers thought it was a bloody joke. [We went] from being in a time of resourced operations to the non-resourced 70s where they were quite tight.

AAJ: What did they do to retain people then if they weren't able to replicate realistic training and if they didn't have the ammunition and people had to yell 'Bullets! Bullets!'?

Warrant Officer Rosemond: Initially they didn't do anything due to the downsizing of the force structures. People corps transferred where there were opportunities and Armoured Corps was one of them; retention wasn't really a big thing. When the government was in turmoil and the budget was blocked, I happened to be on exercise in Singleton. Supply was blocked and we weren't getting paid. When supply is blocked there is no government money, it's a critical time. We were told by the Army formally that if we had a financial circumstance where we needed to guarantee an income that we were free to go and get another job. We were told that there was no guarantee as

to when supply would be back and there would be no mandate forcing us to come back as the Army and therefore the government had failed its obligation.

AAJ: So how many people took advantage of this circumstance?

Warrant Officer Rosemond: Well my troop sat down and we discussed it. I had faith in the Army and I had faith in the government getting this sorted out. I didn't think that it would go for two weeks. My answer to them was that I wanted to make a commitment and go back to the exercise, and when we returned to the unit if it still wasn't fixed, we would make a choice then. We went back to the exercise and were home before the next pay day. It was sorted out really quickly because the government and Gough Whitlam were sacked. The Opposition stated that they would pass supply and there was an election. It was fixed while we were still on exercise. I don't doubt that the Army lost some people through this.

Retention then became an issue because in the latter part of the 70s, there was a lack of vision in what the Army was about and what its role was, what it was training for and the resources that it had available. Some of the resource limitations of that period got a lot worse.

It was an interesting experience in the late 70s and 80s and there were overseas postings and attachments to other armies. We created [Exercise] Long Look, and had other exchange programs with the Americans and the Kiwis. These were very competitive and highly sought after incentives for people to look to. I was privileged to do this and spent two years in Germany with the 1st Royal Tank Regiment. I think maintaining these sort of inter-Army or inter-service opportunities is beneficial.

I actually had a secondment to the Navy on a minesweeper with my troop. We were crew on HMAS Ibis for a few weeks. This was diverse and different. The ship had a crew shortage and they needed crew so we became sailors for a while. I can lay claim now to steering a minesweeper under the harbour bridge. I have photos of me in my Army green shorts in GP boots at the helm. Those sorts of things were innovative and sought after. I think that these are the sorts of things that help people maintain the motivation for their commitment, this as well as adventurous training and sport.

Adventurous training is also beneficial as it engages soldiers in peacetime in emotions beyond their normal life skills environment. It pushes the boundaries of fear and emotions in a safe manner. Canoeing down the Murray is not adventurous, but white water rafting down the gorges in Tully is. You need to train for and go and do Kokoda, train for and go and do a wilderness activity in winter in Tasmania. These are out of your comfort zone where fear and emotion have to be dealt with. This sort of training people will talk about for years; this retains people because they

have common experiences outside of the mundane because training can become mundane or repetitive.

Retention of skills is tied to retention of people. So retention right across the board is significant and the challenge is keeping the competent and right people. I am going to say that from my experience the Army has a massive problem doing this because there is a logjam. Where the logjam is, is with 'open-ended enlistment'. I said this when they were bringing open-ended enlistment into the Army and I will say it again now. If you have a person who reaches warrant officer class one rank at my age which was 33, it's a long way to 55. I actually did 19 years as a WO1, in RSM appointments back to back with a personal commitment to myself and nobody else that when I stopped progressing that I would get out. I didn't want to be a WO1 who wasn't competitive staying until I was 55 because I was on a good salary. Doing this stops a good WO2 from getting promoted which stops a sergeant and a corporal, it goes on. The brightest, best educated and most technically advanced people are roadblocked by older warrant officers and people who are not going anywhere creating roadblocks. What happens is our brightest get out, and we denigrate the Army's capability, losing the smart people to civilian industry. With the government moving the retirement age further away under MSBS, it's even more critical that these roadblocking people leave. Under DFRDB there was a watershed moment at 20 years of service. There were waves of people from warrant officers down to corporal who got out freeing up space for dynamic growth. We are at a point now where we no longer have this natural attrition or shedding points and we lose the smartest and best people at the wrong times.

AAJ: How did the Army deal with the wounded, injured and ill post-Vietnam? What was the policy for retaining wounded, injured and ill personnel? For how long did Army have to deal with both the physically and mentally wounded?

Warrant Officer Rosemond: We employed them; the guy who replaced me in Vietnam lost an arm and an eye in an RPG incident. A few years later he was working with an artificial arm in the Q Store. He was there for many years. When I was at the Defence Academy, the pay warrant officer had an artificial leg. He was perfect for this role, he was the master of process in pay and leave and organising the cadets for their various allowances and travel etcetera, so [he was] perfectly suited. I am tolerant of people who have war and other related injuries as long as they are doing their job. However, Army priority must be considered and resettlement and ongoing support are essential. Fostering care and support is necessary.

AAJ: What was the Army's policy and plan for dealing with the mentally wounded in the wake of Vietnam?

Warrant Officer Rosemond: I think that they're still dealing with the mentally injured; there is no doubt that people are affected differently by operational experiences. People have dealt with significant trauma to humans; this has to have some effect on you, it affects the civil services like the police and ambulance officers, maybe we could learn from them as well.

What my take on this is, we did no training prior to me going to Vietnam on how to deal with a dead body, and we did no training on how to take a prisoner. Dealing with traumatised bodies or catastrophic damage to a vehicle is very difficult. I took three prisoners in Vietnam, I mean they were pretty placid because we parked a tank on them in the dark and they were too scared to move, but I had to improvise on what to do with them. These things cause emotional scars.

On the mental injury thing I would say that the Army is tenfold better than it used to be. It has now recognised that this trauma is invisible and that each case needs to be dealt with by professionals. The challenge is to get soldiers to seek help and admit injury and for commanders at all levels to support them.

AAJ: Anything else that we can learn from Vietnam?

Warrant Officer Rosemond: I think the challenges will be the same as the 70s and this is training and restructuring with budget cuts. I think Army is already behind with the budget cut issue and I'd suggest that every time that there has been a conflict through history that after the conflict finishes that there have been budget cuts and force reduction. Army has had years of good budgets and I just hope that they put good things in place to sustain the next generation of budget cuts and force reduction.

I learnt that it didn't matter if you were a corporal or private, responsibility may fall to your decision-making, as a team commander or someone on sentry duty.

Preparing for warfighting or peace operations (making, enforcing, keeping or monitoring) we have to prepare people for the environment. By that I mean climate, geography, culture, operational rules, language and environmental factors. We have learned this, and everything I have experienced since Vietnam has had ongoing improvement in these training considerations. Witness how our soldiers engage with locals, kids and elders understanding the consequence of their actions in promoting security and reputation.

I made a presentation to a world army forum in Holland in 99, specifically preparing NCOs for peace operations. Not only was the Australian presentation voted best and most relevant to the topic, but it delivered an interactive view of examples and lessons on the above topics. We are doing this stuff better than most and continue to evolve.

My summary was: you must invest in the junior leadership with the maximum amount of responsibility and decision-making in training; this will enable them

to make sound and timely decisions in operations. In the middle of the night when isolated and a decision to shoot or not shoot is required (instantly) the chain of command can't run down and do an assessment and direct the decision. In peacetime we must train for and support decision-making at the lowest possible level. We must accept the consequences and train to improve.

AAJ: I want to ask you your opinion of the view that there is a similarity in the military's relationship with the government now and in the post-Vietnam period.

Warrant Officer Rosemond: That's the way that I see it also, I think the comparison is extraordinary in every sense. I don't know where we will go with force reduction, but I think that resources will determine that.

AAJ: In periods of resource austerity, tough choices have to be made. What are Army's non-negotiables?

Warrant Officer Rosemond: Training standards and doctrine. I believe these need to be focussed on the conventional defence of Australia, with allies. This can be either on or off shore. I believe rank responsibility needs to be considered as not negotiable. If you say to section commanders that they are responsible for all of the training and leadership responsibility, let them do that. Don't micro-manage 30 soldiers in a platoon individually then on operations expect that corporal to be able to work independently with his team; this needs to be done in training. I believe that we need to make people responsible and accountable at their rank level. This means delegation and the acceptance that there will be mistakes, these mistakes must then be re-practised correctly; if you don't do that, then you only learn lessons from the highest level and you turn the soldiers, corporals and lieutenants into training aides for higher ranks. You also stifle innovation and resourcefulness, personal development and character

AAJ: If you had your time again what would you change?

Warrant Officer Rosemond: Nothing, I don't think I would change anything because with everything that I did I stayed myself, I think that was really important. I was told when I was a WO2 that I wouldn't progress if I didn't change the way that I did things, in that I was too familiar with the soldiers, I played sport, that I would have to forego all of this to be an RSM. It was a pretty serious discussion. I considered that I had been promoted to this point in being myself, and that I wasn't going to change and if this meant that I wouldn't be an RSM then so be it. I think I proved that wrong and that by being yourself you will remain yourself.

If you try to be something that you're not and the pressure is applied and I mean real pressure you will turn into something that you weren't and people will begin to question you. You have to be yourself and have to be honest with yourself and I have found that regardless of rank you have to respect people. Having said that though, 19 years as an RSM was character assassination. I wouldn't say that I forgot who I was but I was and still am a larrikin. I am the guy who, if there is an opportunity to do something, I will do it. I will set somebody up and I could give you a million examples, including throwing a saltwater crocodile into the regimental command vehicle because the Adjutant said that he wanted to see one.

AAJ: What is your fondest memory of your time in service?

Warrant Officer Rosemond [laughs]: I am really stumped, I have a lifetime of memories that all rate, but I would have to say when I said 'Thanks, mate!' to the Governor-General on my last day in the Army.

AAJ: How did that happen?

Warrant Officer Rosemond: It was on receipt of the Army Banner from the Governor-General on the Army Centenary Birthday Parade. I joked at the parade rehearsal that, on receipt of the banner, he would say a few words and I would respond with something like 'Thanks, mate'. Well he laughed and said that he liked that, and General Cosgrove with horror suggested that 'Thank you, your Excellency' was more suitable. After the rehearsal I walked through the tomb of the Unknown Soldier and decided that I would, in fact, say, 'Thanks, mate'. I started wondering what a soldier from 1901 through the Boer War, Gallipoli, the Western Front, the Second World War, Korea, Borneo, Vietnam etcetera would say and here I was about to receive a banner that reflected these campaigns. I wondered what a digger from that era, from somewhere like western Queensland, would say if he received the banner from a high public figure. He'd say something like 'Thanks, mate', so that's what I thought and I did, I said, 'On behalf of a grateful Army, to you and to the people of Australia, I say, thanks mate.'

AAJ: What was the response?

Warrant Officer Rosemond: There was stunned silence! It felt like forever but it was more like a second or two, as I turned and started to walk down the stairs the applause was thunderous, it was amazing. It made every news channel in Australia on TV that night. So saying 'Thanks, mate' to the Governor-General — that or being promoted to lance corporal.

PETER ROSEMOND

Peter Rosemond joined the Army in 1967 following a stint as an apprentice bricklayer. He served as a corporal tank commander in Vietnam in 69/70 and was promoted sergeant soon after returning home in 1971. As a sergeant he served in a number of armoured positions including on exchange with the British Army in Germany for two years. He was promoted to warrant officer in 1978 and enjoyed a variety of postings in a range of locations including the Officer Cadet School – Portsea. In 1983 he was promoted to warrant officer class one and served as a Regimental Sergeant Major (RSM) for the next 19 years, serving in progression with the 2/14th Light Horse Regiment, 2nd Cavalry Regiment, School of Armour, 1st Brigade, 1st Division, Australian Defence Force Academy, then Army Headquarters in his final role as RSM of the Army. His additional tasks included organising the Army Tattoo in 1988 as part of the bicentenary celebrations and numerous battlefield historical events. He concluded his service following the coordination and presentation of the Army Centenary Parade and dinner in 2001.

Since leaving the Army, Peter has taken up a role working with youth, specifically with a number of charity organisations and schools, conducting specialised programs addressing youth issues. He is currently Director of Rock Up Adventures Pty Ltd, Director of Cessnock District Learning Centre and President of Cessnock PCYC.

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CHIEF OF ARMY SPEECH

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APPLIED STRATEGY FROM THE AUSTRALIAN PERSPECTIVE

CHIEF OF ARMY'S ADDRESS TO US ARMY LAND POWER IN THE PACIFIC SYMPOSIUM, 10 APRIL 2013

LIEUTENANT GENERAL DAVID MORRISON, AO

It is indeed a great honour to address this conference which has drawn together representatives of the land forces from many nations across the Asia-Pacific — or perhaps, as it is coming to be more accurately described, the Indo-Asia-Pacific region. I am going to talk about strategy and, not surprisingly, Clausewitz will receive several passing mentions. I intend to offer a view as to why the two Roosevelt presidents are key to the Asia Pacific region for historical, albeit primarily strategic reasons. I will also offer you the perspective of a Cold War Soviet Admiral — and an American gangster will get his underserved, but no less intriguing time in the sun.

I am, appropriately, part of the debate on what is the best national strategy for my country's future. I served as a junior and mid-ranking officer through a time when I believe we got it wrong; we turned inward and sought security in our geographic isolation. This led to a distortion in our defence force structure that has taken 12 years of operations and too much blood and treasure to correct.

I agree fundamentally with the British scholar Colin S. Gray who wrote in his book *Another Bloody Century* that 'if the troops cannot do it, strategy is mere vanity'.

So, applied strategy from an Australian perspective is what you will get because, as well as ensuring our soldiers are as well prepared for the current fight as is humanly possible and addressing some important cultural issues in my organisation, the most critical legacy I leave, along with all my fellow service chiefs, is a robust and relevant force for the third decade of this century. Adoption of the right strategy is central to that.

For an Australian soldier, the symbolism of addressing a conference hosted by the Association of the United States Army in Hawaii is laden with particular significance. The attack on these islands in 1941 brought the United States abruptly into the great global conflagration of that time, the Second World War. It set in motion seismic historical forces which continue to shape the security environment of all our nations.

President Franklin Roosevelt's decisions between late 1941 and early 1945, accepting fully his 'Europe first' policy, were a driving impetus behind those forces, just as his earlier namesake, Theodore, had also been instrumental in turning the American gaze west and establishing that country as a great Pacific power in the first decade of the last century. His maxim of 'speak softly and carry a big stick' has helped shape twentieth century military philosophy as has, albeit sublimely, Al Capone's dictum that 'you can go a long way in this neighbourhood with a smile. You can further in this neighbourhood with a smile and a gun.'

In our century, the much-proclaimed 'end of history' never eventuated. The reverberations of the events of 7 December 1941 continue to ripple among all the nations of Asia and the littoral states of the Indian and Pacific oceans. By the time that war ended, the United States had become indisputably the greatest maritime power in history and the most important ally of my nation, eclipsing Great Britain in both of those roles. Furthermore, less than two decades after the end of hostilities, Japan had become one of Australia's most important trading partners and is now also a key strategic security partner.

The emergence of the United States as the dominant global maritime power has been the single most influential factor in defining the Australian approach both to grand strategy and its key component, a maritime strategy, since 1945. However, as I will demonstrate through reference to our history, Australia has always sought partnership with the dominant maritime power of the day to enhance its security and to collaborate in the maintenance of a global order conducive to freedom of the seas and supportive of free trade between nations. In this, we are not alone.

And, of course, the other profound legacy of the Second World War across the Indo-Asia-Pacific region was to sound the death knell of colonialism and to unleash the forces that created so many vibrant nations — China, India, Indonesia, Singapore, Malaysia, Vietnam and South Korea to name but a few. The Second World War ushered in a new dynamic order across the region which today is the

engine of global economic growth. That region is also home to some of the largest and most capable land forces on the planet. And of course it is currently the focal point of some of the most sensitive inter-state rivalries in the global system.

Just as history did not end, nor did the nation state wither away as predicted by some adventurous intellectuals. Rather, after a decade in which many Western nations have been focused on intra-state conflict, transnational security issues, and the proliferation of non-state actors — particularly terrorists, people traffickers and pirates — the dimensions of the Asian Century are being determined by the actions of powerful states.

Accompanying the impressive economic growth of Asian nations, particularly China, is a marked increase in regional expenditure on weaponry which some refer to as an 'arms race'. This seems somewhat alarmist to me. Nonetheless, it is vital for the security and stability of our region that all our armies engage one another in constructive ways to build confidence and to exchange our perspectives on issues that develop trust among us. Forums such as the Land Power in the Pacific symposium provide wonderful opportunities to do just that. Such engagement has the capacity to reduce tensions between nations, particularly those sharing land borders, and to develop human networks capable of functioning during periods of tension.

Today I want to discuss the key role that ready, relevant and robust land forces can, and must, play in maritime strategy. Inevitably, when one discusses 'the Pacific', the image that immediately springs to mind among the uninitiated is of vast tracts of ocean policed by powerful fleets. The slightly more informed may imagine amphibious forces such as marines, perhaps even supported by air power. It is tempting and easy to gloss over the indispensable role of generic land forces in maritime strategy in general, and in contributing to the stability and security of this region in particular.

Indeed, the history of my nation exemplifies that. On the only occasion that Australia experienced direct attack, the security of our island continent was ulti-mately achieved by joint operations on land both in the archipelagic approaches to Australia and, most notably, through protracted land combat in Papua and New Guinea. Nor can we forget that, in this endeavour, we were supported admirably by the United States Army, many of whose divisions sustained significant casualties in the battles that saved Australia. For obvious reasons, the battles in Papua and New Guinea enjoy the status of folklore in Australia. But the scale of US Army operations across the Pacific is not appreciated nearly enough in either of our countries.

The roll call of divisions raised here in Hawaii, particularly National Guard Units called into federal service which in turn transited though Australia and New Zealand to fight in New Guinea, Guadalcanal, the wider Solomon Islands,

and ultimately the Philippines, extends well beyond those most associated in the Australian mind with New Guinea — the 32nd and 41st infantry divisions. And both our armies learnt some harsh lessons about thrusting poorly prepared units into unforgiving jungle terrain with insufficient training in the crucial months of 1942. But both our armies adapted while in contact and achieved high levels of professional mastery, particularly in the latter stages of operations in New Guinea and on Luzon in the Philippines.

So the Australian Army knows from bitter experience that our security is not provided by our geography. The ability to operate in concert with allies and to support friends on land in our immediate neighbourhood are among our core assigned tasks.

Beyond the immediate defence of the sea, air, and land approaches to our continent we are committed to contributing to the stability of our region. This we seek to achieve through close cooperation with our neighbours, particularly Indonesia, Papua New Guinea, New Zealand, Singapore, Malaysia and Timor Leste. And we seek to achieve this by developing the ability to project joint forces into the littoral areas of our region. I hasten to add that this is not 'forward defence'. It is about collaborating with our close neighbours across the spectrum of shared threats. Moreover, it innately constitutes an example of land forces operating in the context of a 'maritime strategy'.

What do I mean by that term? It is too often misunderstood or used interchange-ably with naval strategy. Neither to the Army nor to the government of Australia does the term 'maritime' denote anything mystical or esoteric. Indeed, according to our current strategic guidance, contained in the extant White Paper, the defence of Australia is to be achieved through a maritime strategy. It is our official policy.

Since our very foundation as a nation, Australia has implemented a maritime strategy, more often than not instinctively and without resort to theoretical abstrac-tion. It has been our almost uninterrupted mode of strategic conduct throughout our history as a sovereign state.

Having expressed a distinctly Australian scepticism about abstractions and defi-nitions, I am now reluctantly obliged to provide some in the interests of clarity, but then I did warn you. For me, no-one has better defined maritime strategy than Sir Julian Corbett, whose seminal work in this area ranks alongside that of Clausewitz in his meditations on war on land. Corbett defined maritime strategy thus:

> By maritime strategy we mean the principles which govern a war in which the sea is a substantial factor. Naval strategy is but that part of it which determines the movements of the fleet when maritime strategy has determined what part the fleet must play in relation to the action of the land forces … it is almost impossible that a war can be decided by naval action alone.

According to the father of maritime strategy it was evident that only the harmonious collaboration of land and naval forces could achieve strategic decision. In his most oft quoted passage he asserted:

> Since men live upon the land and not upon the sea, great issues between nations at war have always been decided — except in the rarest cases — either by what your army can do against your enemy's territory and national life or else by the fear of what the fleet makes it possible for your army to do.

More recently, the eminent historian of the United States Navy, John Hattendorf, provided an even more precise definition which addresses the challenges of our era of 'whole of government responses' to complex security threats. He wrote that:

> Grand strategy is the comprehensive direction of power to achieve particular national goals, within it maritime strategy is the comprehensive direction of all aspects of national power that relate to a nation's interests at sea. The Navy serves this purpose, but maritime strategy is not purely a naval preserve. Maritime strategy … include[s] diplomacy, the safety and defense of merchant trade at sea, fishing, the exploitation, conservation, regulation and defense of the exclusive economic zones at sea, coastal defense, security of national borders, the protection of offshore islands, as well as the participation in regional and worldwide concerns …

He further noted that, throughout history, most significant fleet engagements took place within reasonable proximity to land or to deny passage of troops and materials to land. This latter point was also emphatically made by the foremost Soviet Naval strategist of the Cold War era, Fleet Admiral Sergei Gorshkov, in his insightful work *The Sea Power of the State*. Gorshkov argued that,

> Most of the major [naval] forces combat clashes in the World Wars were associated with operations against the shore … or to ensure transoceanic or sea communications.

I trust I need not continue to labour this point. Land forces are integral to maritime strategy and we are all grappling with some pressing professional questions as to how we configure our land forces to participate effectively in maritime strategy in the so-called 'Asian Century'.

As I mentioned earlier, the Australian Army has a long history of providing land forces in support of the global order guaranteed by the dominant maritime power of the day. During our brief history as a nation we have been fortunate that this global role has been performed by a power whose interests were largely co-existent with our own and with whom we enjoyed deep institutional and historical ties.

Of course that fortuitous marriage of sentiment and pragmatism has served Australia very well. To put it crudely, we have been a net importer of security ever since our emergence as a nation. Our relatively low levels of defence expenditure

throughout much of our history, the fiscal and demographic constraints on the size of our military forces and our relatively small population confine us to the status of what the esteemed British scholar Beatrice Heuser would classify as a 'third-tier' maritime power.

By that she means that the achievement of anything other than fleeting and localised sea control is probably beyond us, except in a relatively benign security environment. And the sustained maintenance of good order at sea, across multiple vital sea lines of communication, has been the province of only a handful of super-powers since the first era of globalisation in the fifteenth century. Accordingly, it is shrewd and pragmatic strategy for us to align ourselves with the dominant maritime power of the day. This we have done for over a century and it explains much of our military and diplomatic history.

However, even as a medium or third-tier power, we have distinctive independent interests, particularly in our immediate region. On occasion it may fall to us to take a more prominent role, along with some of our close neighbours, in response to local security crises. Such crises may occur when civil disturbance strikes, or in the wake of natural disasters or extreme climatic events. Our deployment to Timor Leste in 1999 and in 2006 are examples of the former, and our support to Indonesia after both the tsunamis of December 2004 and 2006 are examples of the latter.

Of course the introduction into service of the Canberra class ships, the landing helicopter docks, our amphibious support vessel, HMAS *Choules*, and three air warfare destroyers, symbolise a real commitment on the part of the government of Australia to be able to deploy land forces as part of a joint task group, probably in a coalition setting, in the immediate region.

Now, as we all know, continuous modernisation and force generation are unglamorous but essential aspects of military leadership. In order to contribute agile, robust land forces as part of joint and coalition task groups capable of contributing to the security of the Pacific region, the Australian Army faces numerous challenges. Introducing new equipment is just the tip of the iceberg. We have to match Navy's platforms with an Army force generation model and develop an amphibious culture that ensures we can utilise what is an intrinsically joint capability.

To set the bar higher, like every other Western military, we are being asked to adapt to the era of fiscal austerity affecting all our nations as our governments seek to reduce budget deficits. I take heart, however, in the belief that our modernisation plan actually suits the times admirably. We in Australia have closely monitored the continuous modernisation process that the United States Army has been engaged in since the end of the Vietnam War. From the introduction of the All Volunteer Force and the doctrine of the Air-Land Battle, the intellectual energy with which the US Army has sought to match its structures, equipment posture and doctrine to the exigencies of the changing character of war has been dynamic and worthy of extensive study.

In seeking to increase your agility and ability to deploy to diverse trouble spots, you have constantly been forced to balance combat weight and firepower against the capacity for rapid deployment. Given the enormous combat weight and firepower of many of your legacy Cold War systems, this has constituted an unenviable dilemma. Nor have you always been well served by some policy-makers who have been too easily influenced by transient trends which promise decisive, casualty-free military operations.

Clausewitz warned eloquently against such fads, emphasising the enduring reality of war as a violent duel over policy ends. The panaceas promised by Revolutions in Military Affairs, Effects Based Operations, precision strike, and pervasive situational awareness have largely proven illusory. War remains nasty, brutish but, sadly, not short.

One of the advantages that we, the Australian Army, have enjoyed because we did not face a military opponent more capable than that of rural-based militias from the end of the Vietnam War until our operations in Afghanistan, was that we missed much of the intellectual ferment of the 1980s and 1990s which produced the Air-Land Battle and the later concepts of Deep Battle.

Until recently we were predominantly a light infantry force. Since the initial operations in Afghanistan in 2001 and later against the *Fedyaeen* in Iraq, it became obvious that even irregular forces now had access to man-portable platforms capable of inflicting serious harm on conventional forces. The response of the Australian Army has been to urgently increase its combat weight and protection to survive on the modern battlefield. We were fortunate in being able to start with a relatively blank sheet of paper because we lacked any Cold War legacy systems. Indeed, stepping up to the weight of the Stryker brigade would have been a major upgrade of our fighting power and survivability.

While there are no easy answers to this dilemma, I recently read an insightful piece of analysis by Colin Gray, published by your Strategic Studies Institute at the US Army War College. In his persuasive monograph entitled *Categorical Confusion? The strategic implications of recognizing challenges either as irregular or traditional*, Gray makes a compelling point. Too often in the wars since 9/11 we have responded to an enemy whose tactics differ from our own by inventing a new category of war. This leads to major force structure and force preparation changes, often 'off the line of march' while in contact. Such challenges are exacerbated when, at the end of the conflict, there is a prevalent trend, particularly in developed, democratic countries, to focus away from the conflict recently fought in order to make allowances for a different, and sometimes cheaper, national policy requirement.

This is not a criticism of democratic government. Military operations are extremely draining on the public purse and fiscal rebalancing is both desirable and inevitable. However this 'pivot of policy vision' can leave a military, especially

an army, adrift in a sea of competing ideas that are often allied neither to fiscal appropriations nor to actual geo-strategic necessities. Confusion over role and structure can easily follow. Then, the ability to look deeply and see far, beyond the immediate to the future challenges that a nation may face, becomes paramount. In the Australian Army's case I am framing that work within the context of a maritime strategy and within the framework which will be articulated in my government's new Defence White Paper.

A smaller army like Australia's has neither the vast, sophisticated intellectual infrastructure to constantly invent fresh categories of conflict nor the luxury of sustaining an enormous array of specialised forces. We need to be capable of meeting a near peer conventional competitor and an irregular enemy with the same force package. For us, emphasis on foundation warfighting skills is the imperative. In addition, we need a standard brigade structure which can survive and defeat threats across the spectrum of conflict. As I continually tell the soldiers of my army, we cannot and *will* not benchmark ourselves against the Taliban.

In order to comply with the guidance of our government to be able to provide a brigade group for sustained operations against a credible peer competitor in our region, we needed to standardise our brigade structures and their vehicle fleets. Only this will provide an army of our size the ability to rotate forces through an area of operations for a protracted period.

For too long in our history we sustained an outmoded mass mobilisation model better suited to the wars of national survival of the first half of the last century. This meant we maintained a diverse family of capabilities many of which were unique and hollow. This had to end, both in order to enhance capability and to rationalise vehicle inventories, training budgets and simulation and sustainment costs. We are well on the way to achieving a common brigade structure which yields three standard, multi-role combat brigades.

These brigades are backed by three enabling brigades comprising aviation, ISTAR (intelligence, surveillance, target acquisition, and reconnaissance), and logistics respectively. A vital part of this newly designed army is a smaller but more viable Reserve force of six brigades shadowing their regular counterparts.

The more difficult issue of inculcating an amphibious culture, what Mahan might have called 'sea mindedness', will demand long-term cultural change. This will only be developed by 'doing' rather than just 'thinking'. This is an art honed by experience and is one that, for us, has become extinct since we last fielded robust amphibious forces in Borneo in 1945. That is one drawback of being a third-tier power. One can become complacent about vital enablers such as sea lift, naval gunfire support and sophisticated situational awareness which are provided by our larger ally.

However, we are on the way to rectifying this and I am confident that we will develop a modest but effective amphibious capability within the next few years. In

this way I believe that the Australian Army is developing robust, agile land forces capable of collaborating with our allies and neighbours in contributing to the security and stability of our region and the wider Indo-Asia-Pacific region.

By way of conclusion, just two weeks ago I had the honour of addressing a conference in Indonesia attended by some of the most astute strategic thinkers in our region. They were as one in welcoming Australia's direct engagement with them in issues of maritime security, counter-terrorism and actions to curb trans-national crime. We achieve this through finding security *in* Asia, not finding security *from* Asia, as a former prime minister of my country astutely observed.

A focus on an inward-looking continental defence, as experienced by the Australian Defence Force in the two decades after Vietnam, restricted us to that latter paradigm and skewed our force development in a way that tied us to our own land mass. It sent the message that we feared invasion from some ill-defined horde. Thankfully, as the effects of globalisation and the emergence of rising Asian powers offers Australia the opportunity for deep integration into the fastest growing region on earth, we now look to share the security burdens of the region along with the rich commercial opportunities it provides.

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CAPABILITIES & CONCEPTS

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NICHE THREAT?

ORGANIC PEROXIDES AS TERRORIST EXPLOSIVES

MARK BALI

ABSTRACT

Viewed superficially, the 2005 London bombings appeared to be a fairly standard, albeit devastating terrorist attack. However, post-blast investigations pointed to the use of a potent new weapon in the modern terrorist's arsenal — organic peroxide explosives (OPEs). Through analysis of the London bombings and other key incidents in which these explosives have been used, this article will reveal a gradual but unequivocal increase in the manufacture and employment of OPEs in explosive attacks. In order to counter the threat posed by OPEs, it is essential to understand their unique characteristics, to recognise their implications, and to devise mitigation strategies. This knowledge is not only crucial to the work of explosive ordnance device (EOD) personnel, but also to intelligence operators and capability managers. This article aims to draw together elements of terrorist methodology, security planning and explosives chemistry to define the unique threat posed by OPEs in an effort to raise awareness, promote discussion and articulate options for dealing with this threat.

The ADF is emerging from a period of intense counter-IED capability development while also coming to terms with a strategic shift of focus away from the Middle East. Given the ADF's partnership with other government agencies in responding to such threats in a domestic context, the time is ripe for discussion of the ADF's ability to manage the threat posed by OPEs in both a domestic and international setting.

INTRODUCTION

Terrorism and asymmetric warfare have arguably been two of the ADF's key threats since the 9/11 attacks catapulted religious extremism to the front of the national psyche and prompted Australia's contribution to the US occupation of Iraq. Improvised Explosive Devices (IEDs), considered the asymmetric weapon of choice, represent by far the largest source of coalition casualties in the recent Iraq and continuing Afghan campaigns. But, as a number of mass casualty domestic terrorist attacks in coalition countries have shown, this new conflict is not always conducted in an easily defined area of operations.

Counter-terrorism in Australia is a multi-agency affair, with the ADF tasked by government to be prepared to deal with contingencies beyond the resources of state or federal agencies. It is therefore important that the ADF's explosive ordnance device (EOD) capability, as part of the whole of government counter-terrorism solution, is able to counter explosive threats as capably in central Sydney as in the Middle East. This is particularly timely considering the ADF's current strategic refocus from the Middle East. Australia is now better prepared to respond to terrorism than ever before. Intelligence agencies were strengthened in the wake of the 9/11 attacks, boosting their ability to detect threats while still in the planning phase. The increased resources allocated to border protection operations have also reduced the likelihood of terrorists, weapons and explosives being smuggled into the country.

Yet an asymmetric threat will, by definition, adapt to new strengths in the responsive agencies. Increased border protection adds impetus to the growth of 'home-grown' terrorists such as those discovered in the UK and US. Similarly, making the import of explosive materials more difficult provides greater incentive for terrorists to switch to domestically sourced improvised or stolen explosives. The increased monitoring and surveillance of terrorist activities also forces them to seek resources in new, more covert ways. For these reasons it is vital to continually analyse those means by which strengthened controls can be bypassed. This article will analyse the way in which organic peroxide explosives (OPEs) can be utilised by both terrorists in Australia and insurgents in Afghanistan, and the factors which push IED manufacturers to accept the risks inherent in using such dangerous materials. Robust responses to small technical threats comprise the building blocks to achieving an effective counter-terrorism capability in Australia.

TERRORISM AND EXPLOSIVES

The development and gradual proliferation of explosives in the wider community has provided terrorists with an unprecedented means to commit large-scale

terrorist attacks while avoiding capture. An explosive is a semi-stable chemical or mix of chemicals that can sustain a rapid chemical reaction without the participation of external reactants such as oxygen. Such rapid reactions typically trigger the explosive's production of vast quantities of gas and heat, resulting in a shock that causes mass damage to nearby objects through thermal burns, shock force and kinetic transfer.

Explosives are classed as tertiary, secondary and primary, based on their relative sensitivities. Reliable initiation requires a highly sensitive explosive to transform an external force (electrical, chemical, thermal or mechanical) into a shock wave strong enough to ensure the detonation of the bulk explosive. This class of materials, known as primary explosives, is the most sensitive to friction and heat, as illustrated in Table 1. This sensitivity is the reason for their use in one of the critical components of an IED — the detonator. Their sensitivity means that a flame, hot electrical filament or mechanical striker can provide enough energy to trigger an explosive chain reaction. These primary explosives are critical resources in IED manufacture as they comprise the determining factor between a pop or small fire, and a devastating blast.

> Counter-terrorism in Australia is a multi-agency affair, with the ADF tasked by government to be prepared to deal with contingencies beyond the resources of state or federal agencies.

TERRORIST USE OF EXPLOSIVES

The ability to store chemical energy in such a dense, controllable and easily accessible form has increased the broad employability of explosives — from mine blasting to passenger vehicle airbags. These same properties also allow terrorists to plan an attack that can be triggered variously by the victim, a remote timer or environmental conditions once a getaway has been effected. This largely removes the need to face one's intended target, a moment when an attacker may have a last minute change of mind. The 'remoteness' of explosive devices increases the likelihood of escape. No other form of terrorist weapon comes close to explosives for this combination of killing power and separation for the perpetrator.

Security authorities have long recognised that protecting the population from terrorist attacks is best achieved by preventing or interdicting the device prior to its placing or detonation — often referred to being 'left of the bomb' (on a left-to-right timeline from formation of intent to successful attack). Precursors for easily synthesised explosives are regulated and tracked to ensure that any planned

Table 1. Comparison of explosive classifications.

	Detonation velocity (m/s)	Friction sensitivity (Newtons of downward force)	Gas generated per kg explosive (Litres)	Classification
Ammonium Nitrate / Fuel Oil (ANFO)	2500-3000	>353	970	Tertiary
Trinitrotoluene (TNT)	6900	>353	730	Secondary
pentaerythritol tetranitrate (PETN)	8400	60	823	Secondary (Booster)
Lead Azide	4500-5300	0.1-1	308	Primary
Hexamethylenetriperoxide diamine (HMTD)	4500	<0.1	1000	Primary
Triacetone triperoxide (TATP)	~5300	<0.1	~550	Primary

Note: This table highlights the differences in the characteristics of each of the key types of explosive. Detonation velocity measures provide an indicator of the impact of the shock wave, while the volume of gas generated tends to govern how powerful the explosion is. Together they determine the destructive potential of an explosive. Friction sensitivity shows how much pressure needs to be applied to two sliding surfaces between which the explosive will detonate on movement.

attack will rise above the surveillance threshold early enough to allow intervention. Critical supplies such as detonators are hazardous to manufacture due to the sensitivity of the required primary explosives. The primary explosive fill used in commercial detonators is difficult both to source discreetly and to synthesise in high purity.

The ever-increasing list of terrorist attacks in modern societies demonstrates, however, that these difficulties are not insurmountable. Ultimately, individual bombers and groups will reach a compromise between the risk of drawing the attention of security agencies and a desire for the enormous impact of high-powered commercial or military explosives. Any means of gaining access to explosives while avoiding detection provides terrorists with a dangerous opportunity to gain the initiative and poses a highly attractive option — even if such means entail considerable personal risk. Personal risk appears to rank low on the list of concerns of a terrorist intent on making a large-scale attack.

ORGANIC PEROXIDES

Not all organic peroxides can be used as explosives. The term 'peroxide' refers to a molecule within which two oxygen atoms are bonded together by a single bond. The simplest form of peroxide is hydrogen peroxide, commonly used in dilute solution as a bleaching agent and disinfectant. The peroxide oxygen-oxygen single bond is particularly weak, a characteristic which gives peroxides their inherently unstable nature.

Certain organic peroxides are able to sustain a powerful detonation, and at this point they begin to be regarded as explosives in their own right. The best known of these include triacetone triperoxide (TATP), hexamethylenetriperoxide diamine (HMTD) and methylethylketone peroxide (MEKP). It is important to distinguish between OPEs and explosives mixes containing hydrogen peroxide. Hydrogen peroxide — organic matter (HPOM) mixes — are more akin to ammonium nitrate/fuel oil (ANFO). In a HPOM, the oxidiser is hydrogen peroxide, and the fuel can be almost any finely ground organic material, although performance will vary based on the fuel used. A HPOM is not an OPE as molecular bonds between the hydrogen peroxides and the organic components are not required. HPOMs are significantly less friction sensitive than OPEs such as TATP and HMTD, and usually less powerful.

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To understand the power of these explosives, it is illustrative to compare them with a standard military grade explosive such as TNT. TATP achieves a power result of 83% of TNT. HMTD is more powerful still. A notable characteristic of OPEs is their very high levels of sensitivity to mechanical impact, friction, heat and electrostatic discharge. TATP, HMTD and MEKP are all significantly more sensitive to friction than lead azide, which is one of the most common primary explosives used in military and commercial detonators. The data presented in Table 1 compares the sensitivity of OPEs with that of other common explosives. The sensitivity of TATP in particular is heightened by the tendency to sublime (slowly vaporise) at room temperature and crystallise on nearby surfaces. These characteristics make OPEs extremely dangerous to handle in any significant quantity. Paradoxically, these same dangerous characteristics are precisely those sought by a potential terrorist.

Most OPEs also have simple synthetic procedures. The synthesis of TATP is relatively straightforward as long as some basic precautions are taken with temperature

and rate of addition. Recipes for preparing these explosives are available through a number of internet sites, not all of which are terrorist sites. Purification is also straightforward, providing pure crystalline products as depicted in Figure 1. Their sensitivity makes handling large quantities dangerous, though this can be mitigated to some extent.

Figure 1. Raw OPEs. TATP and HMTD both form white crystalline powders in their raw form, similar to this organic peroxide used in laboratory trials. Synthesis and purification methods for most OPEs are relatively simple and do not require specialist equipment.

All of this means that OPEs occupy a unique niche in the explosive world on the scale of sensitivity versus accessibility. As was noted earlier, primary explosives are crucial to the construction of an IED that can be relied upon to fully detonate. Lack of primary explosives (together with a generally poor understanding of explosives) was part of the reason the Times Square Bomber of 2009 failed to initiate his load of gas cylinders and fertiliser — the result was a fire rather than an explosion. The sensitivity of OPEs presents a potential solution to this problem. On the other side of the scale, many raw ingredients for OPEs are available at most hardware shops, and the sheer volume of these chemicals in industrial use make tracking the small quantities

> Certain organic peroxides are able to sustain a powerful detonation, and at this point they begin to be regarded as explosives in their own right.

required challenging if not impossible. This unfortunate intersection of covert access, power and sensitivity places OPEs in a separate class when their security implications are considered.

OPES AS EXPLOSIVES

OPEs have been recognised for over 100 years, with HMTD discovered as early as 1885 and TATP in 1895. HMTD reportedly found use for a brief period in the mining industry as a primary explosive, but was soon superseded by more stable compounds. In general, however, OPEs have seen very little legitimate use due to their sensitivity. After their initial discovery, TATP and other OPEs were not researched in any great depth due to their lack of application.

The 1980s saw a resurgence of interest in these compounds, but from a more sinister source. Extremist groups such as the military wing of Hamas saw OPEs as a ready source of primary and even bulk explosive. The risks inherent in the production and handling of these explosives was outweighed by the sheer difficulty in acquiring conventional explosives, and TATP became a staple explosive for the conduct of suicide bombings and other attacks. With the rise of Al Qaeda in the late 1980s and the establishment of its associated training camps, knowledge of the production of OPEs spread, further accelerated through the growth of the internet in the late 1990s.

With information on its synthesis so readily available, it is now reasonably common for law enforcement agencies in modern Western democracies such as Australia to discover these explosives in bombing incidents. In 2008, for example, a Sydney man detonated a phone-activated TATP pipe bomb at a suburban property, killing a bystander. More recently, in October 2010, a US teenager was charged over the detonation of a TATP-filled pen-bomb which injured a fellow student. When police searched the teenager's home, 'significant quantities' of TATP were found.

Figures from the AFP Australian Bomb Data Centre reveal that from 2006 to 2008 home-made explosives accounted for 9.5% of total bombing incidents in Australia. With the exclusion of bombs known to have been built with incendiaries such as fireworks, gas pressure, and Molotov cocktails (which are technically not explosives), this figure rises to 28%. While more detailed figures are classified, it is reasonable to assume that a proportion of these incidents would involve OPEs considering their ease of access and simple production. Anecdotal evidence from members of the state fire authorities supports this conclusion.

The use of TATP is not limited to schoolyard pranks and home experiments. Aside from consistent use in the Israeli-Palestinian conflict, OPEs have seen increased use in major international terrorism cases. One of the most prominent cases was the 'shoe-bomber', Richard Reid, a self-confessed member of Al Qaeda.

Reid attempted to detonate a bomb containing the high explosive PETN with a TATP priming charge on board Flight 63 from Paris to Miami. The attempt failed due a minor technical glitch, but had the potential to bring down the passenger airliner. It was later discovered that the shoe-bomb was by no means unique, with a second, identical bomb found in the possession of Gloucester (UK) resident Saajid Badat. Badat had also been planning to board an aircraft with the aim of near-simultaneous destruction of two US-bound airliners, but had pulled out at the last minute. Both men allegedly received their bombs from an Arab bomb-maker during a visit to Afghanistan in 2001, a claim supported by forensic analysis.

The shoe-bomb cases highlight the importance to terrorists of TATP as an accessible primary explosive. While PETN is a relatively sensitive secondary explosive, it is not sufficiently sensitive to be reliably detonated by a simple mechanism such as a firing pin or flame. In this instance, TATP appears to have been the trigger to initiate the powerful PETN main charge.

While the shoe-bomb plot was foiled, another example, in which the bombs remained undetected prior to detonation, demonstrates the power produced by the combination of OPEs with other HMEs. On 7 July 2005, four men (all British citizens) arrived at a London train station in two hire cars. After organising their rucksacks in the boot of the cars, the men disappeared into the transport system. At 8.50 am, three of the men simultaneously detonated bombs hidden in their rucksacks during the height of the subway rush hour, while another was detonated over an hour later on a double-decker bus. The coordinated attack killed 52 people, injured hundreds and brought London's public transport system and business district to a complete standstill. While the terrible cost in terms of lives lost can be calculated, the financial and psychological cost extended far beyond the physical damage of the bombs.

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The official account of the 7 July attack (often referred to as the 7/7 bombing) delivered to the House of Commons provides a detailed insight into the way this group of men was able to achieve its goal of destruction. Notably, the key members of this plot were British-born citizens and had not attracted the attention of British security services up to the point of the attack. This is a remarkable achievement considering the capability of British counter-terrorism agencies with their decades of experience from operations in Northern Ireland. Two of the four bombers were found on intelligence records when reviewed after the bombing, but simply as peripheral to other ongoing investigations. All four men had evaded the attention of authorities during the planning, preparation and execution of their attack.

The British Intelligence and Security Committee Report of 2006 revealed that the bombs were constructed using OPE-based explosives. Multiple open source outlets have quoted TATP as the specific explosive used, although the 2011 Coroner's inquest revealed that an OPE (HMTD) was utilised only in the detonator. The bulk explosive was a lower powered mix of hydrogen peroxide and organic material (a HPOM), making it less sensitive and less powerful than OPEs. The committee report suggested a figure of two to five kilograms of explosive per device. The official account stated that the fourth bomber had bought batteries at a news-stand prior to detonating his device on the bus, suggesting that the devices were electrically initiated, which was confirmed in the Coroner's inquest. The bomb-making facility was later identified in a suburban flat in Leeds. It is not clear in the open source literature where the bombers acquired their explosive know-how. Two members of the group had travelled to Pakistan for a few weeks in the lead-up to the bombings, and authorities believe that it is possible the men received some training during these brief visits.

> The British Intelligence and Security Committee Report of 2006 revealed that the bombs were constructed using OPE-based explosives.

The London 7/7 attack is an example of the way home-made OPEs enabled a determined group with minimal training to avoid detection by authorities while planning a highly coordinated terrorist bombing with devastating consequences. At no point in the lead-up to the attack had the purchase of chemicals or the explosives manufacturing process in the middle of suburbia triggered suspicion from authorities or the local populace. The use of HMTD in the home-made detonators ensured the reliability of the group's IED design, with all devices functioning as planned (despite one apparently suffering battery problems). Furthermore, the power of HPOM explosives, made from easily accessible sources, was graphically and clearly demonstrated in vision of the upper deck of the London bus which had been torn open by the explosion, as illustrated in Figure 2. While OPEs may not have constituted the main explosive fill, they enabled the construction of a reliable weapon capable of achieving the primary aim of the terrorists — the infliction of mass casualties to deliver a political message.

These international examples have brought OPEs not only to the attention of authorities, but to other terrorist groups as well. Counter-terrorism raids in Australia in October 2005 were, in part, triggered by advice from intelligence agencies that had intercepted the group's attempts to buy sizeable quantities of acetone, sulphuric acid, a large ice box and (tellingly) backpacks. At this stage, the media had reported the use of TATP in the London attacks. It was all but certain that the men were planning a copy-cat attack of the London bombing, and the quantities of chemicals

Figure 2. London 7/7 bombings. The power of home-made explosives was graphically illustrated in the bombing of this London bus on 7 July 2005. A bomb (estimated at around five kilograms) carried in a backpack destroyed the bus and killed 14 people including the bomber, injuring 110 others. All four of these devices detonated as planned, signalling the use of HMTD in the improvised detonators.

involved hinted at large-scale destruction. Again, the terrorists were men who were residents of the country they planned to attack. Fortunately, in this instance, the Australian Federal Police and other agencies had sufficient evidence to launch raids before the cell had a chance to put its plans into action.

The spread of OPE use was further illustrated in the Christmas Day attack in 2009, in which a Nigerian Islamic extremist attempted to detonate a (reportedly) TATP/PETN device hidden in his underwear. The unique design involved initiation by injection of a liquid in a plastic syringe, making the bomb entirely free of metal so as to evade airport security. While this initiation method was distinctly different to Richard Reid's shoe-bomb, the two main explosive ingredients were the same (PETN and TATP), as was the idea of secreting the device in clothing. Fortunately, this device failed to detonate in the same way as Reid's. The links suggest that attacks do not even need to be successful to effectively propagate their design globally. Again in 2009, Najibullah Zazi brought quantities of TATP to New York planning to bomb the subway system, but was foiled by the FBI. Needless to say, this planned attack was also inspired by the 7/7 bombings. According to open source reporting, Zazi intended to use TATP as his explosive of choice, possibly even in the main charge.

The application of OPEs in IEDs also has the potential to affect ADF EOD elements abroad. Technical details of IEDs found in current theatres of operation remain classified, which is why this discussion has necessarily remained domestically focussed and does not extend to the latest developments and threats. It is clear, however, that threat forces in ADF areas of operation such as Afghanistan tend to have reasonable levels of access to military grade explosives or detonators through theft, the availability of the explosive remnants of war, or through the black market, so the somewhat riskier explosives such as OPEs are not required to construct IEDs. Insurgent access, however, is coming under threat as coalition operations continue to strengthen the local authorities' ability to police and control access to explosives and precursor material such as ammonium nitrate fertiliser. As access becomes more difficult, IED facilitators will need to look for new sources of explosives.

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The pressures of supply and demand in the IED chain can encourage IED manufacturers to incur additional risk, and it would be surprising if OPEs do not begin to appear as the security situation in Afghanistan improves. Any forces remaining in theatre will need to react and evolve with the threat as the ADF's mission accomplishment changes the technical threat confronting EOD operators.

UNIQUE HAZARDS, NOVEL SOLUTIONS

First responders faced with OPEs must also confront a unique set of hazards in any device or container that includes OPEs. The first challenge is to identify that OPEs are actually present in the IED. EOD operators may not be able to identify whether an IED contains an OPE detonator as the detonator itself is unlikely to be accessible. Of greater concern is the use of an OPE main charge. While such a design may be dismissed as too dangerous, the Moroccan attacks of 2003 provide just one historical example which demonstrates that personal risk is often not a major concern to terrorists. This incident, which claimed 45 lives including those of the bombers, was reportedly (at least in open sources) conducted with TATP as the bulk charge.

Leaving aside the difficulties in determining whether an IED contains an explosive fill of OPEs, dealing with the sensitivity of such an IED can test conventional EOD methods and equipment. The safest method of dealing with an IED is to blow it up in place using a counter-charge or triggering the IED remotely. However this is not always possible, particularly if the device has been placed next to fixed

sensitive installations (flammable stores, high value infrastructure, etc). The use of 'blow in place' procedures also destroys much of the forensic evidence on the IED which may be crucial in identifying the bomber and the source of the explosives. This is particularly important in the domestic context, but also increasingly in military peace enforcement and stability operations. In such situations, rendering safe (also known as disablement or defusing) is the preferred option.

While there are a number of ways to render such devices safe, the principles remain consistent. The components of the IED must be separated using a method that prevents the device from functioning as designed. One common method is the use of kinetic disruptors in which high speed jets of water target strategic areas of the IED to neutralise key components. While this is a very effective method under normal conditions, it carries an unreasonable risk of triggering an OPE main charge, as the high kinetic energy transfer is liable to directly detonate an impact-sensitive explosive fill. Dissolving the explosive fill with diesel is another method EOD teams often use to deal with OPEs. However, aside from practical concerns over how to contain, store and move the litres of explosive-contaminated fuel, this method has not been subject to thorough safety testing. Despite these risks, dissolution remains one of the few viable methods to deal with such a situation and continues to be recommended in Standard Operating Procedures for bomb squads around the world.

One common method is the use of kinetic disruptors in which high speed jets of water target strategic areas of the IED to neutralise key components.

An ideal solution for the OPE hazard lies in identifying a chemical agent or physical process that would rapidly and safely neutralise the material *in situ*. Methods that have been investigated include thermal degradation, acid degradation and metallic compound degradation. Most of these methods, however, do not work well in the field environment. Given the risk of explosion, heating is not a suitable means of safely neutralising peroxide explosives in anything other than microgram quantities. Substantial heat is also produced in the reaction of acid with OPEs, which leads to detonation of anything greater than microgram-sized quantities of peroxide. When weaker solutions are used to reduce this risk, degradation is incomplete, leaving a residual explosive risk. Some work has been undertaken to investigate the neutralising of TATP or other OPEs through other chemical reactions; however, at this point, a result suitable for field use in the EOD trade remains elusive.

While research continues, a viable, field-ready solution remains some way off. The ultimate goal is a catalyst-based solution that allows a small quantity of agent to neutralise many times its own weight of explosive, providing a portable and safe

means of neutralising the explosive hazard. The technical barriers are significant, and continued research will be necessary to realise the goal of rapid field neutralisation of OPEs.

CONCLUSION

The aim of this article is not to imply that Australian society is at the mercy of a weapon that is at every terrorist's disposal — the situation is not quite so dire. Nor is it assumed that this is the highest priority within all counter-IED efforts, as there are more pressing technical challenges to improve safety both for operators and the protected population. It is important to note, however, that in all the historical OPE incidents described, the explosives have detonated before authorities were aware of them, would never have functioned in the first place due to technical glitches, or had not yet become operational due to effective or fortuitous intelligence and surveillance. There have been few instances that have permitted the use of EOD techniques to render a viable OPE device safe. This leaves a delicate decision to be made in terms of the priority allocation of scarce EOD resources. Should the potential damage that may be caused by the disabling of an OPE IED be simply accepted on the basis that OPE IEDs are currently relatively rare? Or should the ADF and other agencies work to increase their ability to deal with an explosive which is likely to grow in utilisation as the security apparatus closes off alternatives?

Both options are potentially acceptable and justifiable, but cannot be debated effectively in open-source literature. The debate must be grounded in real-time and robust intelligence, considering the exact limitations of classified capabilities, and be balanced against broader counter-IED and counter-terrorism initiatives

> The IED threat encountered by the ADF across its operational theatres is daunting to say the least, and managing that threat comes down to an 'art of the possible'.

and priorities. Should a decision be taken to increase the ADF's ability to deal with such devices, some investment in specific research, trials, and materiel will be required to boost capability. Specifically, suggested areas for development include devices to provide stand-off detection of OPEs to allow EOD operators timely warning of the precise nature of the device they face. Comprehensive field trials must be conducted to ensure the suitability and safety of currently recommended methods of dealing with OPEs such as dissolution. Continued research towards a safe, field-deployable method of complete neutralisation is essential, with extensive field trials of identified solutions a follow-up to the necessary research.

The IED threat encountered by the ADF across its operational theatres is daunting to say the least, and managing that threat comes down to an 'art of the possible'. Providing capability against every contingency is not an option. In some instances a deliberate decision is taken to leave a contingency unguarded; at other times the gap is not identified until exposed by an incident. Promoting discussion on the nature of such threats can only enhance those decisions relating to the ADF's capability to deal with OPE IEDs, allowing such decisions to be made, as they say, 'left of the bomb'.

THE AUTHOR

Captain Mark Bali is an officer of the Royal Australian Engineer Corps. He graduated from the Australian Defence Force Academy with a Bachelor of Science with Honours in Chemistry, and has published two papers in academic chemistry journals. Since his graduation from the Royal Military College, Duntroon, and the School of Military Engineering, Captain Bali has actively sought to apply his technical chemistry knowledge throughout combat engineer employment. He has served the majority of his career in regimental positions in the Incident Response Regiment in Special Operations Command and has also deployed as a Troop Commander to Afghanistan, where he was largely responsible for the counter-IED and forensic evidence management activities of his task force. This operational experience combined with his academic background led to the award of the CDF Fellowship in 2010 sponsoring research to find a method to rapidly and safely chemically neutralise organic peroxide explosives (OPEs). Captain Bali has continued this research as a PhD program in parallel with his career, and currently works in capability development in the ADF's Counter IED Task Force.

CAPT Bali's chemistry research has equipped him with a thorough understanding of the hazards inherent in handling OPEs, balanced by his experience in EOD and high risk search operations. This article aims to instigate a professional discussion of the real threat posed to the ADF by a very different terrorist resource, and to raise the Australian EOD community's awareness of and ability to deal with OPEs.

CAPABILITIES & CONCEPTS

F3EA — A TARGETING PARADIGM FOR CONTEMPORARY WARFARE

MITCH FERRY

ABSTRACT

The current landscape of military operational thinking is dominated by the complex warfighting paradigm that embodies a shift to *war among the people*. In such wars, the precise application of force to produce effects — targeting — is critical to achieving military objectives while supporting civil aims and avoiding undesired outcomes. Contemporary warfare challenges the practice of targeting and the philosophy of its purpose, promoting a shift from *targeting for effect* to *targeting to learn*. This examination of the find, fix, finish, exploit, assess (F3EA) construct provides insights into the evolution of the targeting problem and the current solution, revealing strengths, limitations, and opportunities for change.

INTRODUCTION

The current landscape of military operational thinking is dominated by counterinsurgency, as clearly demonstrated in Iraq and Afghanistan from 2001 through to the present day. This paradigm represents a shift from the late 20th century focus on industrial warfare (the legacy of state-based wars,

particularly the Cold War and Gulf War I) to a less complete, more transient form of conflict that takes place *among the people*.[1] Contemporary warfare poses several clear challenges to established doctrine and processes given the enormous changes in technology, in the nature and aims of the adversary, and in the operational environment.[2] In particular, the practice of targeting — the application of force to produce an effect on selected battlespace elements — is adapting rapidly and dramatically to the new face of warfare.

This article will describe both the current and emerging approaches to targeting and highlight their advantages and disadvantages in terms of the current and future requirements of the ADF. The article's purpose is to demonstrate a shift in the fundamental aims of targeting in contemporary conflict from *targeting to effect* to *targeting to learn*.

TARGETING

The purpose of targeting in the contemporary context and as it is applied to current conflicts is defined by ADF doctrine as 'to integrate and synchronise joint fires [and] the employment of lethal and non-lethal weapons into joint operations to achieve the joint commander's mission, objective and desired effects.'[3]

Targeting thus relates to any action or process in which force (lethal, non-lethal or a combination of capabilities) is intentionally applied to change the state of a target. A target is defined as 'an object of a particular action, for example a geographic area, a complex, an installation, a force, equipment, an individual, a group or a system planned for capture, exploitation, neutralisation or destruction by military forces.'[4]

Targets are divided into types: scheduled or on call, unplanned or unanticipated. The type of target is related not only to its inherent properties, but also to the capabilities of the attacking force and the nature of the targeting environment. Planned targets (scheduled or on call) normally emerge from a target system analysis (TSA) developed during military planning. The TSA defines those adversary system elements that must be affected in order to achieve the commander's objectives. The application of the targeting process to planned targets — the shaping of the battlespace — is a deliberate approach. Targets labelled 'unplanned' or 'unanticipated' can also be considered targets of opportunity; the generation of effects against these targets involves a dynamic targeting approach.[5]

> The current landscape of military operational thinking is dominated by counterinsurgency, as clearly demonstrated in Iraq and Afghanistan …

Contemporary warfare is of a complex and often asymmetric nature which poses challenges to understanding adversary systems. Where limited understanding of the adversary and environment exists, dynamic targeting both shapes and manages the battlespace. The application of planned targeting is limited and almost exclusively non-kinetic (this is increasingly the case as conflicts extend to counterinsurgencies). In this case, targeting is considered not as a *process*, but as a *conceptual framework* for directed operations within the context of a larger campaign.

TARGETING CONCEPTS

Discussion of targeting concepts can be broadly separated into examination of the general targeting approach and analysis of the approaches adapted to dynamic targeting. The general targeting approach, which gives rise to the targeting process that remains largely unchanged and occurs over extended time-frames, normally in conjunction with a deliberate planning process, is essentially the same across the US allies, and adheres generally to US doctrine.

The targeting process is a linear set of procedural steps that must occur regardless of the target system, situation, type of weaponry or type of conflict. The targeting construct suppresses intricate detail and drives focus towards important concepts. Essentially, it is an attempt to frame the targeting problem in a way that will assist decision-making.[6] This has several immediate advantages:

- A targeting model allows a commander to understand the targeting process in his current context. It is not the steps at the procedural level that change, but the way they are executed.
- A model enables a commander to organise and manage his force according to the specific meta-task requirements relating to the current targeting problem represented by the targeting construct.
- Targeting is presented in an analytical framework represented by the model that is judged suitable for assessing performance, effectiveness, and capability to enable decisions on improvements to the targeting system.
- A targeting model introduces a concise philosophy under which targeting should be conducted which is easily conveyed to practitioners and non-practitioners alike.

THE TARGETING PROCESS

The US Joint Targeting Cycle provides the basis for the technique of targeting employed by both US and Australian militaries.[7] The cycle is a process containing a series of procedural steps which, for reasons of utility, efficiency, command responsibility, and legality, must be followed. The targeting cycle — which includes all the

elements of a generic targeting operation — has six components reflected in both US and ADF doctrinal publications, as outlined in Table 1.

The simplifications offered in ADF doctrine also provide a broadening of each component — primarily for assessment — which includes immediate combat assessment as well as broader capabilities assessment, campaign assessment, and lessons.

REPRESENTATIONS

With the basic requirements and abstract procedure of targeting defined by the Targeting Cycle, different representations of the process are adopted for specific contexts. This article will focus on the most commonly used US and ADF approaches.

The US Army (and where appropriate the US Navy) makes use of the four-phase Decide, Detect, Deliver, Assess (D3A[8]) construct as the overarching approach to targeting, complemented by dynamic targeting constructs.[9] In particular, these dynamic methods are useful to address gaps that exist in current doctrine and ensure the immediate relevance of the targeting process to current conflicts.[10]

While the Joint Targeting Cycle is applicable to targeting in all environments, US doctrine provides a specific land/maritime targeting approach. Table 2 describes the US Army doctrine definition of the elements of the D3A construct.

While basic and direct, the D3A concept meets tactical battlefield requirements by largely assuming a fixed and limited area of operations in which a commander has complete control of all assets. This construct has been used for targeting on all time scales until the advent of the F3EA model (with some incursions of air force doctrine into the dynamic targeting space).

The concept of dynamic targeting[11] evolved in US and ADF doctrine throughout the 1990s and early 2000s to address specific concerns that emerged during targeting

Table 1. Comparison of elements of the ADF and US Joint Targeting Cycles.

US	ADF
End State and Commander's Objectives	Commander's Guidance
Target Development and Prioritisation	Target Development
Capabilities Analysis	Capabilities Analysis
Commander's Decision and Force Assignment	Force Application
Mission Planning and Force Execution	Execution
Assessment	Assessment

Table 2. Elements of the D3A targeting construct.

Decide	Target categories identified for engagement
Detect	Targets are acquired and monitored
Deliver	Target is attacked in accordance with command guidance
Assess	Estimate of effect is compiled and reported

conducted within a compressed timeline.[12] Dynamic targeting aims to focus targeting staff on those elements of targeting that are essential to actioning a target in minimal time while still meeting a commander's responsibilities under the Rules of Engagement.[13] F3EA has emerged as the current favoured dynamic targeting construct, following on from the find, fix, track, target, engage, assess (F2T2EA) model previously employed.

Given its original development and primary use by the USAF, F2T2EA provides an air-centric approach to progress from command direction to validated target effect.[14] Air targeting is inherently operational or strategic by nature (as opposed to largely tactical land-based targeting) and often requires the coordination of multiple assets with multiple ownership (or complicated command and control) across multiple areas of operation. F2T2EA assumes well-developed command guidance to initiate targeting and is designed to allow information to flow quickly between phases and functional areas within a targeting centre to meet the dynamic nature of the situation. The elements of F2T2EA are outlined in Table 3.

During Operation Enduring Freedom in Afghanistan in 2001, airpower was required to directly support Special Operations forces and undertake strike operations in response to swiftly shifting command priorities.[15] The lack of flexibility in implementation of the targeting cycle and the lack of coordination

> The targeting process is a linear set of procedural steps that must occur regardless of the target system, situation, type of weaponry or type of conflict.

between levels of command were key realisations — highlighted by the failure during Operation Anaconda to capitalise on terrorist targeting opportunities. Since 2001, combined air (ISR/strike) and ground force elements have been increasingly used to prosecute high value, low contrast, often mobile targets in complex environments.

Operational observations relating to dynamic targeting have included a requirement to synchronise ISR and all-source intelligence requirements and analysis, a need to access and process information at the lowest possible level, and a need to flexibly apply assigned assets. A key point is that different targeting concepts enable

Table 3. Elements of the F2T2EA construct.

Find	The detection of an emerging target following clear command guidance to collect on named areas / targets of interest.
Fix	The positive identification of the target as valid and the generation of data with sufficient fidelity to permit engagement.
Track	Target position and track (if appropriate) maintained and desired target effects confirmed.
Target	The generation of engagement options for recommendation to a designated commander; the simultaneous resolution of restrictions and deconfliction issues.
Engage	Action against target to achieve the desired effect.
Assess	The measurement of engagement outcomes and effects on the target; may lead to re-attack recommendations.

different operational capability. The execution of F2T2EA has been found lacking in two main areas: the speed at which the cycle can be executed, and the ability to accurately determine effects and outcomes to enable further dynamic targeting. Further, contemporary warfare poses new challenges in target selection in which targeting itself provides follow-on targeting opportunities. An extension beyond F2T2EA was deemed essential to address these concerns leading to the increasing adoption of the find, fix, finish, exploit, assess (F3EA) model.

ELEMENTS OF F3EA

F3EA emerged from the Afghanistan and Iraq wars as the de facto standard targeting approach for Special Operations units tasked with targeting insurgent networks. F3EA uses multiple feedback loops to simultaneously detect, stimulate, and discover the structure and nature of an adversary system. This feedback occurs through a combination of fast and slow loops following exploitation (fast) and analysis (slow). These loops enable one or more targeting cycles to immediately follow the 'finish' phase of a given target. In this way, F3EA is designed to enable organisational learning about the adversary and the environment. This approach is similar to the concept of *adaptive action* defined by the Australian Army in which an iterative process of discovery and learning facilitates adaptation.[16] Similarities and differences in the two concepts are discussed later in this section.

Figure 1 illustrates the way in which the elements of F3EA relate to specific tasks within a targeting cycle as practised in current operations. The elements of

F3EA are represented graphically with tasks and outputs expanded in detail in the following text.

The tasks and outputs associated with each of the F3EA phases are: find, fix, finish, exploit and analyse. They are explained in more detail in the following paragraphs.

Find describes the process through which targets and their elements are detected, modelled, and prepared. This phase includes the development of an intelligence estimate (to create a holistic picture for command staff — common forms include PMESII[17] and ASCOPE[18] analyses), target system modelling (identifying detectable and targetable system elements), pattern of life development, target nomination (detailed request to target execution authority — based on a 'target pack' including intelligence and analysis) and preliminary target location (used to trigger collection assets to locate and identify target elements).

Fix is the process which allows prepared targets to be identified, located, and monitored in preparation for actioning. This phase includes the generation of a precise location of target element/s in the battlespace, the positive identification of the target, and the maintenance of a track on the target. This phase also includes
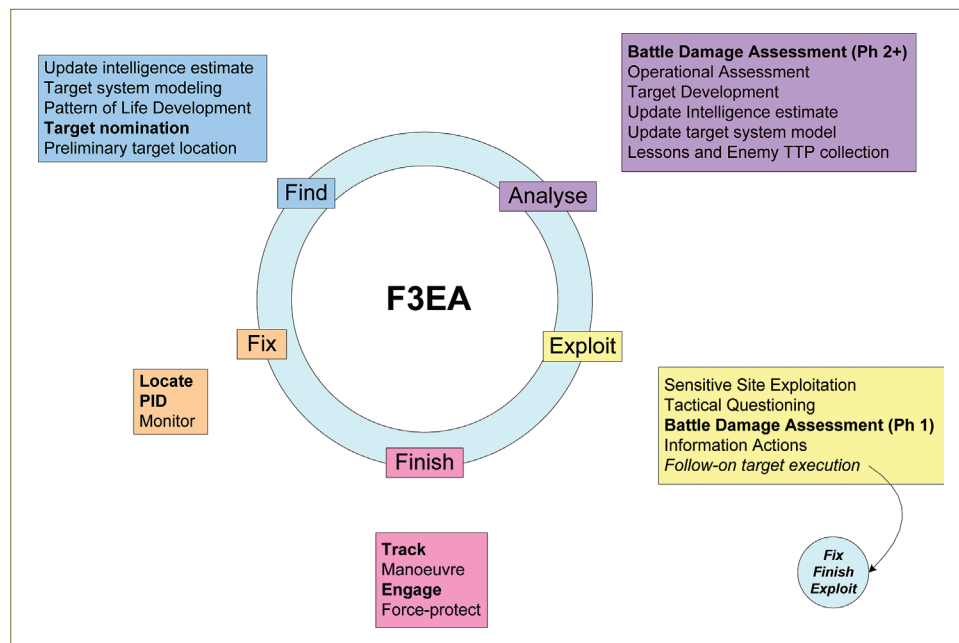

Figure 1. The F3EA concept represented as a cycle, with tasks and outputs of each stage defined. Bolded items are elements of the doctrinal targeting process. The exploit phase allows for an implicit branch to a second targeting operation, normally truncated to reflect opportunism.

the continual update of situational awareness of the local area and detection of indicators and warnings of changes to the situation.

Finish is the term describing the process by which targets are actioned to achieve the commander's desired effect. During this phase a track is maintained on the target while execution assets are manoeuvred to engage the target. Engagement involves the execution of actions to create the desired target effect through kinetic or non-kinetic means.

Exploit describes the process by which opportunities presented by the target effect are identified and branch actions planned, often including the development of a follow-on targeting cycle. This phase includes Sensitive Site Exploitation (the collection of biometrics and physical samples of intelligence value from the target area and the investigation and documentation of the site), Tactical Questioning (gathering human information from persons in or around the target area), Battle Damage Assessment (the initial assessment and reporting of the quality of target effect and recommendations for re-attack), and Information Actions (to exploit the outcome of the finish phase and mitigate against operational risks that may arise due to collateral effects or adversary information actions). Information actions may take the form of messaging, leadership engagement, humanitarian, or other Psychological Operations or information operations capabilities.[19]

Analyse is that process within which detailed research and development is undertaken to restart the F3EA cycle, improve situational understanding, and improve own-system capability. This phase includes combat assessment (a detailed

> F3EA emerged from the Afghanistan and Iraq wars as the de facto standard targeting approach for Special Operations units tasked with targeting insurgent networks.

assessment of effects on the target system), operational assessment (an assessment of the outcomes of the operation in terms of the greater operational plan, producing recommendations for future target sets and apportioning of assets to meet changing operational requirements), and updating of the intelligence estimate and target system model. This phase also includes the development of new targets and may trigger a new targeting cycle. Finally, the analysis of own-force performance (lessons) and changes in adversary capability and effectiveness (enemy TTP) is completed to adapt own-force planning and counter possible future enemy actions.

Taken together, the find, fix, finish, exploit, analyse construct provides a method for dealing with high tempo operations against low-signature targets while focusing not only on the execution of the current target, but the generation of new targets. This recurrent action — based on the idea that, in modern warfare, complex systems

often require some form of action in order to force target elements above the intelligence threshold — forms the point of difference between F3EA and earlier targeting paradigms.[20]

CHARACTERISTICS OF F3EA

The F3EA approach recognises that successful targeting in complex environments is heavily reliant on the exploitation of target and site information in order to facilitate follow-on targeting. It also recognises that the detailed analysis of such information will provide a greater understanding of the adversary and the environment.[21] The F3EA approach thus closely follows the complex warfighting paradigm and espouses two key principles. The first of these maintains that exploitation and analysis, if not the main effort of the targeting process, are the components that keep the process cyclic.[22] The second principle is that modern warfighters must constantly interact with the changing environment in order to learn at the rate demanded by successful targeting operations.[23]

F3EA utilises a double feedback loop (fast/slow) to handle targets emerging at different rates, or targets which require different levels of development.[24] The departure from traditional dynamic targeting approaches is represented by the addition of the 'fast' loop, which speeds responsiveness of the targeting system to targets which emerge during or as a direct consequence of a targeting action. For example, tactical questioning of an insurgent may reveal the location of others resulting in the requirement to prosecute quickly while the information remains relevant. The 'slow' loop makes allowance for more traditional analysis-based target development and execution. This is described in Figure 2, where target development (which may take from days to months or years) is contrasted with the high tempo target execution component, which normally occurs very rapidly and can generate an entirely new target set that itself requires immediate, rapid execution.

F3EA assumes limited knowledge of the target (adversary or threat) system and thus relies not on a comprehensive model of the system during targeting, but rather on an emerging understanding of the system during recurrent F3EA cycles. Such intelligence-led targeting differs from operations-led targeting by the simple qualifier that the information feeding the targeting process is predominantly sourced from intelligence cells or ISR assets in real or near-real time.[25]

> F3EA utilises a double feedback loop (fast/slow) to handle targets emerging at different rates, or targets which require different levels of development.

Michael T. Flynn, former intelligence chief for the International Security Assistance Force — Afghanistan, explains the current F3EA approach in the Afghanistan context with the observation that 'exploit-analyze is the main effort of F3EA because it provides insight into the enemy network and offers new lines of operations.í[26] This concept aligns closely with the Australian Army's ASDA construct which is designed specifically to counter low-signature adversaries.[27] The assumption that most of the target system exists below the intelligence (*detection* or *discrimination*) threshold is matched with the hypothesis that, by perturbing the target system, some target elements must necessarily respond, thus providing a signature that can be detected, analysed, and turned into intelligence concerning the target system.

The Australian Army's *Adaptive Campaigning* concept proposes 'interaction with the problem' as a key element of the planning and execution of operations in a complex environment.[28] Interaction with the problem, through action, subsequent discovery and learning, allows the problem to be better defined (akin to the 'slow' F3EA loop) while behaviour is changed (representing an additional, slower loop that is not a component of targeting, but of planning). Changing the problem frame through iterative adaptive action and learning is a more general aspect of changing the adversary (target) frame through iterative action, exploitation and assessment in a targeting cycle. In this sense, the *Adaptive Campaigning* model can be viewed as a general operational level construct within which the F3EA targeting model neatly fits. The key difference is specificity of purpose: F3EA exists to neutralise or destroy an adversary, while *Adaptive Campaigning* exists to support general purpose land forces in the conduct of joint operations.

There has been increasing recognition of the requirement to maintain a reactive targeting capability across the services in both Australia and the US. The respective air forces have focussed on the 'sensor-shooter' link, reducing the system constraints on tempo for the find-fix-finish component of the cycle.[29] This need to improve
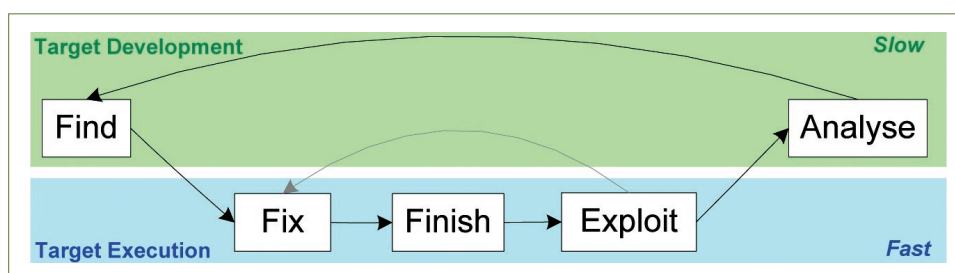

Figure 2. The F3EA model can be separated into two elements: target development and target execution. The full F3EA cycle can be truncated to incorporate just the 'fast' elements (fix, finish, exploit) in highly dynamic targeting environments where target exploitation immediately leads to the presentation of new targets.

system capability to complete the targeting loop quickly is, to some degree, guiding future force design and capability acquisitions and partially explains the huge increase in non-traditional platforms.[30]

F3EA IN MODERN CAMPAIGNS

The focus of contemporary dynamic targeting is insurgent network interdiction, specifically the targeting of high and medium value individuals. The targeting of individuals combines a classic low-signature, transient target with a high collateral effect risk and very high intelligence burden.[31] The Bin Laden raid is an excellent example of such an operation.[32] When coupled with a low force footprint and relatively low availability of collection, manoeuvre, and action assets, this has effectively pushed targeting elements into a paradigm which forces adversary systems to change and react to changes in the system.[33] The discussion of current applications of F3EA in the next section is based on the assumption of these concepts.

There has been increasing recognition of the requirement to maintain a reactive targeting capability across the services in both Australia and the US.

The great strength of the F3EA model is the level of centralised control it affords through the use of organic assets.[34] This approach also produces an inherent weakness, namely the huge consumption of resources — particularly ISR assets — and concentration of these resources in a targeting agency that may operate on only one of the multiple operation lines simultaneously occurring in a modern conflict. This 'opportunity cost' is a trade-off that must be considered when designing force structures and command and control arrangements in modern warfare.[35]

The detection of the target occurs in two parts: find and fix. Find includes the determination that a target exists and can be accessed. This phase includes deeper analysis to determine the location of the specific target under consideration within the larger target system. The fix phase aims to determine a time and location for target engagement while validating the target to enable the finish step to commence.

The assess function is similarly extended to include exploit and analyse.[36] These two steps are linearly linked but maintain two different priorities. Exploit is concerned with immediate collection and analysis of information to enable rapid follow-on targeting and area effects to be generated. Analyse takes the information gained during exploitation, plus other sources of intelligence, to determine outcome effects, create new intelligence about targets or the environment, discover new targets for development, and share this information with other battlespace

users. A further aspect of the analyse phase is self-analysis — the assessment of own-force performance and effects for the purpose of operational learning. The primary purpose of the exploit phase is to provide information-led operational branch options that may be pursued in line with command guidance.

LIMITATIONS OF F3EA

In assessing the limitations of F3EA, it must be noted that this approach is not optimised for a conventional 'first three days' of warfare. In the early phases of conventional campaigns, targeting activities are largely driven by the operational level TSA, leaving little opportunity to dynamically engage or exploit target effects outside the fixed plan. Operation Odyssey Dawn, the 2011 Libyan interdiction, provides an illustrative example in which initial targeting focused on known counter-air and counter-sea infrastructure. Dynamic targets did not become a focus until the air defence system had been (at least partially) dismantled.[37]

F3EA may not be appropriate for conventional industrial targeting, apart from those occasions when dynamic targets occur. The concept of 'exploit' loses meaning in this context and becomes merely the first phase of analysis. In conventional targeting, a large proportion of time is spent in acquisition and tracking, while the 'finish' component is normally rapid. For example, the location and tracking of mobile air defence systems is taxing on ISR systems, with bomber aircraft held on standby; the finish is actioned as soon as a fix is achieved. Exploitation and analysis is minimal and not used to generate new targets; in this situation the standard F2T2EA approach suffices.

F3EA assumes a force structure and resource availability that is specific to forces designed for targeting — namely, significant ISR assets, a large analytical capability, and a rapid and highly reactive finish capability. This use of assets — organic or shared — is not necessarily the most efficient allocation across all lines of operation as an increase in effectiveness in finding and actioning targets comes at the cost of a sub-optimal resource allocation. This concept is well articulated by the US Asymmetric Warfare Group which observes that 'the benefit of utilising F3EA … is that it refines the targeting process to identify and defeat specific individuals. A potential down side to this approach is focussing critical collection assets on targets that are at the lowest level and not focussing assets against networks.'[38]

Current use of F3EA by the ADF is hamstrung by the lack of analytical capacity to fully implement the exploit and analyse phases. Contemporary operations are

> Exploitation and analysis is minimal and not used to generate new targets; in this situation the standard F2T2EA approach suffices.

typified by the presence of 'wicked' problems, fitting the general definition of unknowable and un-testable, unique and 'one-shot-only' solutions.[39] Targeting via the F3EA method is a direct and expedient method of treating these problems. However, without appropriate analytical capability, the application of F3EA may lead to the repetitive treatment of *symptoms* rather than allowing the systematic interdiction that targeting complex networks requires. In modern operations where forces are engaged in a race to learn and adapt, the risk is not only in being too slow, but also in learning the wrong things.

CONCLUSION

F3EA is the product of an evolution of traditional targeting concepts designed to allow targeting elements to compete with adaptable adversaries in complex environments. It is well suited to this particular challenge; when applied by appropriately enabled forces, F3EA has been shown to be highly successful.

The examination of F3EA and the way targeting framing has changed invites reconsideration of the purpose and desired outcomes of targeting actions. By embracing a construct that is inherently reactive such as F3EA, there is a tacit acknowledgement that our ability to understand the environment and the actors within it is insufficient to allow us to gain and maintain the initiative in contemporary conflict — contrary to the general aim of military targeting. This dilemma can be resolved with a reconsideration of purpose — the purpose of targeting in a complex environment should be to gain and maintain initiative within the conflict.

Where initiative requires understanding, learning is key. Targeting is used now not merely to neutralise threats or prepare the operational environment, but to learn about the adversary. Whereas learning had previously been a means to an end (to enable a strike), it is now an end in itself. *What targeting achieves* has changed, bringing opportunities and threats related to the dual outcomes. Targeting in a complex environment invites a tension between learning in order to affect and affecting in order to learn.

This highlights the difficulty of selecting targets and effects in an environment in which the true nature of a targeted system is unclear — or swiftly changing. Another view regards operations as an asset allocation problem, and the science of command as determining an allocation that can achieve multiple and sometimes conflicting priorities; in this sense, the F3EA representation simplifies the targeting problem.

Modern conflict requires a targeting philosophy that can respond very quickly to changes in the environment, maximise the collection and exploitation of available information, and maintain simultaneous streams of target development and execution at tempos dictated by adversary operations. Warfare against conventional adversaries will continue to leverage the efficiency and centrally prioritised effects at the joint

operational level offered by the standard targeting approach.[40] Future conflicts will use a combination of targeting approaches optimised to the types of warfare, forces, and adversaries within the conflict environment.[41] Given the environment forecast in the Australian Army's complex warfighting concept, F3EA will play a role in which dynamic and adaptable targeting actions are required.[42] It now remains for doctrine and training to recognise and reflect the full potential of the F3EA approach.

ENDNOTES

1   For discussion of this concept, see R. Smith, *The Utility of Force: The Art of War in the Modern World*, Knopf publishing, UK, 2007.

2   M.T. Flynn, R. Juergens and T.L. Cantrell, 'Employing ISR: SOF Best Practices', *Joint Force Quarterly*, Third Quarter 2008, p. 56, retrieved on 7 December 2010 from http://www.dtic.mil/doctrine/docnet/courses/intelligence/intel/jfq_50_art-2.pdf

3   Australian Defence Doctrine Publication (ADDP) 3.14, *Targeting*, Land Warfare Development Centre, Puckapunyal, 2009, para. 1-3.

4   Ibid., para. 1-4.

5   This concept of opportunity relates to the discovery mechanism of the target rather than to the importance (or necessity) of action against the target.

6   While abstract models can be considered as processes — taking inputs, transforming them, creating outputs — the idea of 'process' is too often tied to a rigid adherence to step-wise procedure; the concepts are separated here to avoid confusion.

7   US JP 3-60, *Joint Doctrine for Targeting*, 13 April 2007; ADDP 3.14, *Targeting*.

8   US FM 3-09.12 *Tactics, Techniques, and Procedures for Field Artillery Target Acquisition*, 21 June 2002.

9   D3A is used in deliberate targeting — targeting that will be planned when operational planning is underway. Dynamic targeting constructs are used when targeting must be planned during operational execution.

10   While the methods do not modify the steps of the targeting process, the method or approach frames the way the process is executed. See D.N. Propes, 'Targeting 101: emerging targeting doctrine, Fires', March 2009, retrieved from http://www.thefreelibrary.com/Targeting+101%3A+emerging+targeting+doctrine.-a0200920409 on 7 December 2010.

11   The concept of *dynamic* targeting is largely artificial in the contemporary context, relating not to the properties of the target but instead to the way it is treated within the battle rhythm of a targeting force. The concept is more relevant to air operations (where processes are established to service a known target list) than land operations (which possess largely asynchronous targeting processes).

12   Specifically in ADF doctrine — ADDP 3.14 *Targeting*.

13   And ultimately the Laws of Armed Conflict.

14 That is, optimised for a *centralised control, decentralised execution* model as opposed to fully decentralised models favoured by land forces. See (US) Air Force Doctrine Document (AFDD) 2-1.9, *Targeting*, 8 June 2006.

15 B. Lambeth, *Airpower against Terror: America's Conduct of Operation Enduring Freedom*, RAND Corporation Monograph, 2005.

16 *Adaptive Campaigning 09 - Army's Future Land Operating Concept*, Directorate of Future Land Warfare, Canberra, 2009.

17 Political, military, economic, social, infrastructure, information.

18 Areas, structures, capabilities, organisations, people, events.

19 In ADF doctrine psychological operations are a component of information operations. See ADDP 3.13 *Information Operations*, Land Warfare Development Centre, Puckapunyal, 2006.

20 The intelligence threshold is a simplification of the 'ISR threshold' concept which recognises that targeting in the contemporary sense is led by intelligence which is a product of analysed information, and not by ISR data or information.

21 More importantly, the difficulty in separating the adversary from the environment

22 Flynn, Juergens and Cantrell, 'Employing ISR', pp. 56–61; W.J. Hartman, *Exploitation Tactics: A Doctrine for the 21st Century*, School of Advanced Military Studies Monograph, Fort Leavenworth, Kansas, 2008, p. 20.

23 J.D. Deeney, Finding, Fixing, and Finishing the Guideline: The Development of the United States Air Force Surface-to-Air Missile Suppression Force During Operation Rolling Thunder, Masters Thesis, US Army Command and General Staff College, Kansas, USA, 2010.

24 Either due to the complexity of the target or due to development that may have already occurred.

25 Real or near-real time as defined by the local commander on the basis of tactical developments or by operations using baseline (non-real time) intelligence.

26 Flynn, Juergens and Cantrell, 'Employing ISR'.

27 Act-Sense-Decide-Adjust. See *Adaptive Campaigning*, p. 31.

28 Ibid., p. 33.

29 For a discussion of the concept of a 'hunter-killer' architecture for the USAF, see D. Deptula and M. Francisco, 'Air Force ISR Operations – Hunting versus Gathering', *Air and Space Power Journal*, Winter 2010, pp. 13–17, at: http://www.airpower.au.af. mil/airchronicles/apj/apj10/win10/2010_4_04_deptula.pdf

30 Particularly armed unmanned aerial vehicles.

31 This includes the requirement to collect evidence of enemy or criminal activity to enable nomination of an individual as a target.

32 For details of the raid, see http://www.dailymail.co.uk/news/article-2021260/Osama-Bin-Laden-Full-details-raid-catch-Al-Qaeda-leader-know-SEALs-identity.html accessed 20 February 2013, or the fictionalised account in the popular film *Zero Dark Thirty*.

33 Small footprints lead to discontinuous battlespaces where large areas within the terrain have little or no friendly force presence and can be considered non-permissive.

34 For an expansion of this concept in the Iraq context see W. Rosenau and A. Long, *The Phoenix Program and Contemporary Counterinsurgency*, Occasional Paper, RAND Corporation, 2009, at: http://www.rand.org/pubs/occasional_papers/2009/RAND_OP258.pdf

35 Propes, *Targeting 101: Emerging Targeting Doctrine* usefully deconstructs the F3EA process for comparison with D3A.

36 Some proponents add disseminate to create F3EAD; dissemination can also be included in the analyse step.

37 Details of first-day targets are available via U.S. AFRICOM Public Affairs (20 March 2011). *Overview of 1st Day of U.S. Operations to Enforce UN Resolution 1973 Over Libya*. US AFRICOM, available from 19 Feb 13 at http://www.africom.mil/NEWSROOM/Article/8097/overview-of-1st-day-of-us-operations-to-enforce-un

38 *Attack the Network Part 1: Oil Spot Methodology*, US Asymmetric Warfare Group, March 2009, retrieved on 10 December 2010 from: http://info.publicintelligence.net/ArmyAttackNetwork1.pdf

39 For an introduction to 'wicked' problems, see H. Rittel and M. Webber, 'Dilemmas in a General Theory of Planning', *Policy Sciences 4*, Elsevier Scientific Publishing Co., Amsterdam, 1973, pp. 155–169.

40 In a 'target rich' environment.

41 For a discussion of the concept of hybrid warfare — a combination of asymmetric and conventional conflict — see F.G. Hoffman, 'Hybrid Warfare and Challenges', *Joint Forces Quarterly*, Issue 52, First Quarter 2009, pp. 34–39; M. Isherwood, *Airpower for Hybrid Warfare*, Mitchell Paper 3, Mitchell Institute for Airpower Studies, June 2009.

42 Or this role may be filled by an evolved version of the F3EA concept.

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CAPABILITIES & CONCEPTS

AUSTRALIAN ARTILLERY AFTER AFGHANISTAN

CAPTAINS MIKE SQUIRE, JAMES GROVES AND CHRIS O'BRIEN

ABSTRACT

The RAA role in Afghanistan provided an opportunity to demonstrate and refine the artillery capability after decades of doubt over its future. Its Afghanistan experiences have enabled the RAA to evolve, refining, enhancing and reinforcing what is a crucial role. With the imminent conclusion to the Australian commitment in that theatre, the RAA will reconstitute and reorientate towards providing an invaluable capability for Army in future conflicts; this capability, however, may be entirely different to that required during its most recent deployments. Indeed the artillery capability of 2020 will be unique, merging the mutually supportive functions of JFE, air-land integration, GBAD, battlespace management, sensor fusion, ISTAR collection, processing and dissemination, artillery intelligence and support to joint targeting. Achieving this future artillery capability will require appropriate artillery major systems, realistic and pervasive collective training of all the artillery streams, and the inherent flexibility of gunners as an organisation. There will be significant risks and challenges in achieving the artillery capability of 2020, but it must remain the focus of every gunner to meet those challenges and increase the capability of the Royal Regiment for years to come.

INTRODUCTION

Three brave men who do not know each other will not dare to attack a lion. But three men, knowing each other well, sure of their reliability and consequently of their mutual aid, will attack resolutely.

Colonel Charles Ardnant du Picq, 1880

With the Australian Defence Force (ADF) presence in Afghanistan having reached its culminating point, the impending withdrawal of its deployed fighting force has generated a number of strategic policy reviews into the suitability of Defence capabilities for future conflicts across a broad spectrum of demands. Critically for the joint domain, the ADF has sought resolution of lessons learned in precision targeting and engagement, force protection, collateral damage minimisation and persistent battlefield surveillance and target acquisition. Though by no means exclusively responsible for the provision of these functions, the capabilities of the Royal Regiment of Australian Artillery (RAA) represent a key microcosm of this strategic concern.

With a view to capability development for the achievement of Objective Force 2020, the RAA finds itself at the cusp of a technological advent that will see it reaffirm its position as a critical force multiplier in the modern complex battlespace. This article will examine the RAA's development of capability during the Afghanistan conflict, discuss the attributes that characterise the RAA's unique contribution to the ADF's fighting power, and outline the training focus and future combat needs of the RAA under the multi-role combat brigade concept of Plan Beersheba.

CONTEMPORARY WARFIGHTING AND THE RESURGENCE OF ARTILLERY

In the period that spanned the Vietnam and Afghanistan conflicts, the RAA was downsized, neglected and misunderstood. The commitment of the Australian Regular Army to Afghanistan presented a valuable opportunity for the RAA to demonstrate the capability of artillery. As the commitment progressed, all three streams of the RAA — joint fires and effects (JFE), surveillance and target acquisition (STA) and air-land integration — were deployed in role to Afghanistan. Given the requirement to rapidly adjust to the contemporary operating environment, all three streams were modernised and re-equipped to fill some aspects of their artillery role in Afghanistan. Before long, the RAA was able to demonstrate its relevance to the other corps, to Defence, to the government and to the taxpayer. As the RAA gained experience with its modern equipment, more opportunities emerged to expand the

overall artillery capability. Deployment to Afghanistan allowed the RAA to display elements of its capability, to re-equip, to refine the way it achieved its capability and to again prove its potential on the battlefield.

Considering the dramatic shift in RAA capability and focus as a result of the ADF commitment to Operation Slipper, it could be reasonably argued that Afghanistan saved the artillery capability. Paradoxically, however, the employment of artillery in Afghanistan has merely scratched the surface of its future capability. While the achievements of the Australian gunners in Afghanistan have won plaudits both domestically and internationally, the lessons learned from this experience must now refocus the ADF's vision to reflect the potential of the RAA. Future conflicts will require the RAA to provide capability above and beyond that demanded in Afghanistan.

> The commitment of the Australian Regular Army to Afghanistan presented a valuable opportunity for the RAA to demonstrate the capability of artillery.

AFGHANISTAN AS A CATALYST FOR CAPABILITY DEVELOPMENT

The RAA is Army's key provider of tactical offensive effects through the delivery and coordination of JFE, STA and ground-based air defence (GBAD). While each of these capabilities is unique in itself, their integration under the parent banner of the RAA has proven exponentially more potent, efficient and effective. Perhaps more interestingly, the deployment of the three RAA capabilities to the Afghanistan campaign has further served to reinforce both the efficacy and requirement for integration of the RAA in the *joint* environment.

The planned scaling-back of Australia's military presence in Afghanistan has been a catalyst for revisiting the 2009 White Paper and considering how extant and future policy will be executed by a future land force. At both the tactical and operational level, the Afghanistan experience has provided the RAA a springboard from which to develop a three-pronged capability complementary to future operating concepts.

JFE

The offensive support capability of the 1st, 4th and 8th/12th Regiments has predominately centred on the joint fires team (JFT) and Joint Fires and Effect Coordination Centre (JFECC) models of support to manoeuvre operations at sub-unit and unit level respectively. From a tactical perspective, the JFTs deployed to Operation Slipper have filled their traditional role — to provide joint fires and effects advice, liaison and communications to a supported combat team; to coordinate
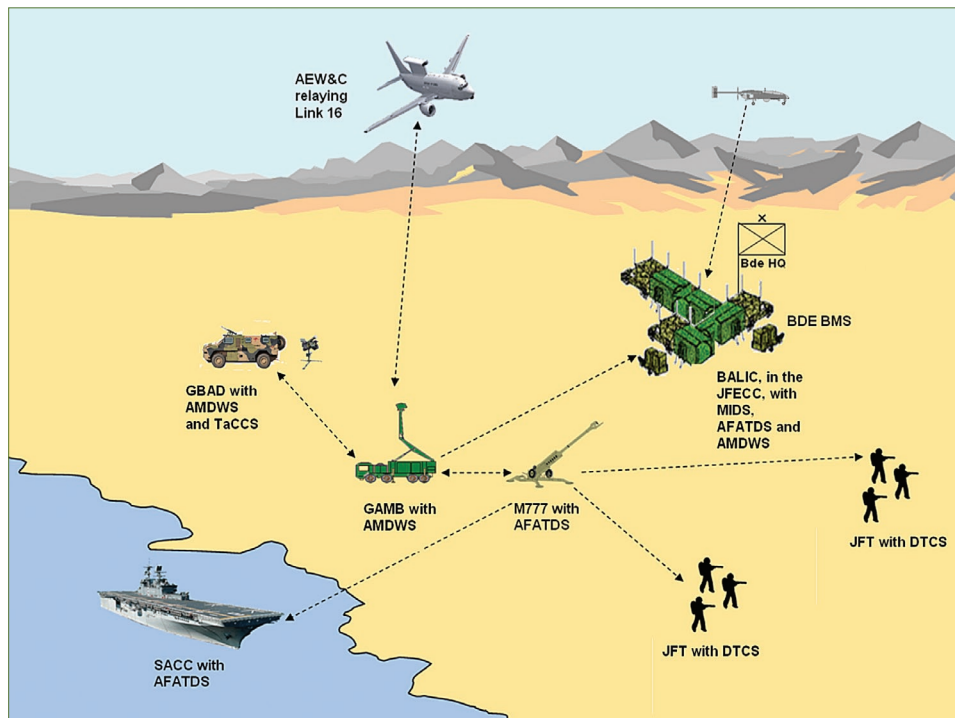
Figure 1. Interoperability of the RAA in the joint battlespace

and deconflict the employment of JFE; to implement the combat team battlespace management plan; and to engage targets within their zone of observation with JFE assets.[1] The JFTs have provided a joint coordination and strike option for manoeuvre operations at the tactical level without significant change to their habitual tasks.

At the operational level, however, there has been considerable reform across the regiments to generate JFTs of sufficient training and flexibility to withstand the rigorous demands of the contemporary battlespace. As each JFT is potentially responsible for the simultaneous control of multiple close air support and indirect fire missions from artillery and mortars, the gun regiments have remodelled their trade structure and aptitude requirements at recruiting levels to ensure that the right soldier is employed in the appropriate trade category. Furthermore, the gun regiments temporarily adopted a unit order of battle that grouped their JFTs in modular batteries. These batteries could then be trained and deployed without interruption to the conventional warfighting training program of the remainder of the regiment.[2]

Finally, in order to provide sufficient joint terminal attack controllers (JTACs) to enable terminal attack control authority at combat team level, the RAA has implemented a process of mentoring and screening suitable candidates across all

ranks. This is a development that has seen a significant capability increase and which has subsequently been adopted across the ADF.[3] These three RAA adjustments have ensured the success of the joint fires contribution to Army's commitment to Afghanistan.

GBAD, SENSE, WARN AND LOCATE, AND AIR-LAND INTEGRATION

The need for force protection in Afghanistan, specifically against surface-to-surface fires, provided a valuable opportunity for the deployment of 16 Air Land Regiment. The rapid acquisition of cutting-edge radar technologies has enabled 16 Air Land Regiment to provide force protection measures to deployed troops, enhanced its ability to provide a local air picture, and increased its capacity for a future ground-based air and missile defence capability. The radar support provided by 16 Air Land Regiment assisted in the identification and detection of surface-to-surface fires launched against Australian static positions, providing vital seconds of early warning to those manning these positions. The nature and frequency of such attacks provided the gunners from 16 Air Land Regiment the opportunity to develop tracking procedures and to upgrade hardware to counter the existing indirect threat while also honing their flexibility to meet a variety of future threats.[4]

> The need for force protection in Afghanistan, specifically against surface-to-surface fires, provided a valuable opportunity for the deployment of 16 Air Land Regiment.

The adoption of 'soft' defensive measures such as the Giraffe Agile Multi-Beam Radar, Lightweight Counter Mortar Radar and wireless audio-visual emergency systems has strengthened the 'hard' defences surrounding the Australian bases in Afghanistan and contributed to the preservation of Coalition lives. These assets were procured and introduced into service while on operation, providing them with immediate combat relevance as well as utility for future employment in a myriad of operational settings.

STA

The 20th STA Regiment has provided tactical STA support to conventional and special operations during Australia's commitment to the Middle East Area of Operations through the employment of weapon locating radar and artillery intelligence and, since 2007, unmanned aerial system support to manoeuvre operations.[5] Since the introduction into service of the Scaneagle unmanned aerial system, the deployed elements of 20 STA Regiment have increasingly found themselves at a premium for the provision of real-time battlefield surveillance and support to joint targeting.

The employment of unmanned aerial systems in recent operations has required significant integration with other airspace users and control agencies, ultimately resulting in the development of and improvement in joint operating procedures. In addition, through its exposure to supported agencies in an operational setting, the unmanned aerial system capability has earned its place alongside fixed and rotary-wing assets as a critical force multiplier for increasingly complex operations. This interaction has undisputed value for Army's understanding of the joint battlespace and has positioned 20 STA Regiment for future capability development to capitalise on the crucial lessons learned during the past decade of continuous operations.

It is no coincidence that Army's unmanned aerial systems capability has developed so swiftly; the complexity of the contemporary battlespace has demanded this. Over the course of the 'evolution' of unmanned aerial systems, Army has transitioned from the use of lightweight, low-endurance platforms capable only of intermittent, poor quality video downlink to vastly superior platforms capable of extended aerial patrols and high fidelity full-motion video. With the inclusion of technology allowing downlink to widely used situational awareness tools such as the Remote Operator Video Enhanced Receiver suite, this capability has proven its utility in assisting tactical commanders with the planning, execution and management of manoeuvre operations.

It is no coincidence that Army's unmanned aerial systems capability has developed so swiftly; the complexity of the contemporary battlespace has demanded this.

While the provision of full-motion video is an increasingly utilised feature of unmanned aerial systems, technological advancements focusing on the development of alternative payloads are increasing its potential combat support utility exponentially. Driven by the requirement for readily available, multiple-source intelligence collection sensors, this research is ultimately expected to facilitate accurate and reliable cross-cueing of electronic and visual payloads on a single platform. Combined with the ability of some unmanned aerial systems (in certain deployable configurations) to be controlled remotely from a forward ground control station, the next generation of unmanned aerial systems will afford supported commanders an unparalleled appreciation of the tactical battlespace.

THE UNIQUE CAPABILITY OF THE RAA

Consideration of the RAA capability beyond Afghanistan necessarily involves some discussion of the tactical options that artillery provides to commanders. In the past it has been argued that the RAA shares many of its principal functions with other

corps. In particular, a crossover of functions appears to exist in the provision of indirect fire, ground-based reconnaissance, aerial surveillance and the coordination of strikes from aerial platforms. A commonly held view is that long-range target engagement with the in-service howitzer constitutes the limit of the RAA's capability. While the artillery purist may nod in concurrence, this misconception ignores the capability evolution within the RAA that has rendered it unique and subsequently so crucial to the contemporary battlespace.

FOUR FUNCTIONS, ONE REGIMENT

The historic capacity of the RAA to provide fire supremacy on the battlefield has not been lost. Rather, it has been refined, enhanced and supported by effect-multiplying technologies that have resulted from the RAA's necessary adaptation to the current operating environment. The result is a corps which specialises in the integration and synchronisation of JFE, intelligence, surveillance, target acquisition and reconnaissance (ISTAR) and GBAD sensor-actor suites, targeting and artillery intelligence and battlespace management and coordination. These functions provide tailored and wide-ranging effects, from precision strike to massed fire, across a broad range of complex targets and tactical scenarios. While other corps may perform similar functions, the intrinsic requirement for integration to multiply the effects
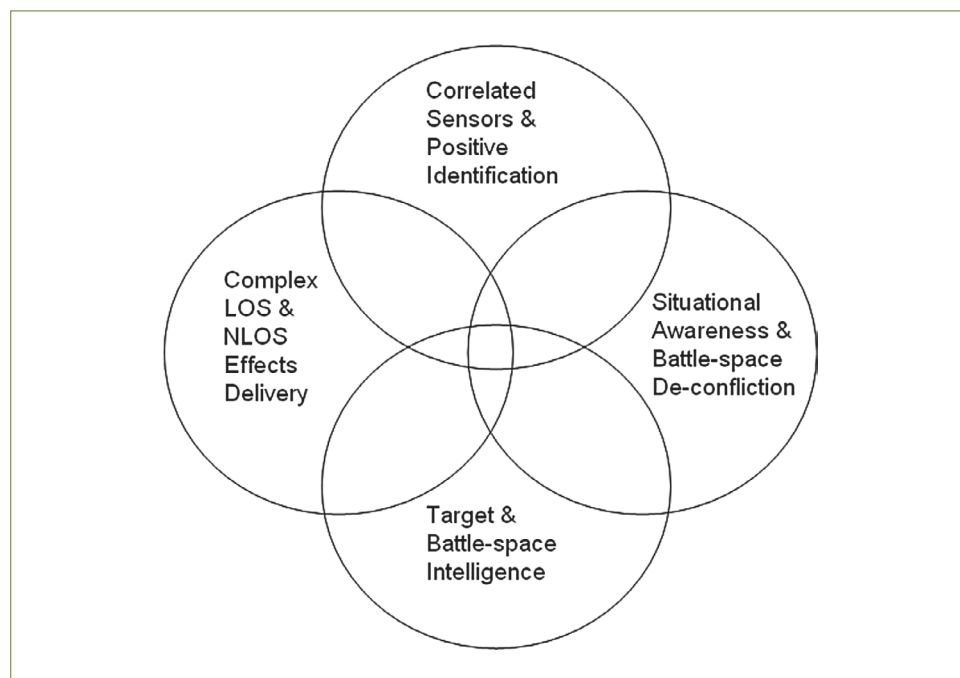

Figure 2. All four one, one four all — the key functions of the RAA and their relationship

of any one individual function — the artillery *modus operandi* — makes the RAA's understanding, execution and capability more complete and ultimately unique.

The strategic policy of decades past has explored the possibility of 'outsourcing' RAA capabilities to other corps and services operating along similar functional lines. While the relevance of the RAA has been hotly debated, the ultimate decision to retain the identity, skills and attributes of the artillery has proven the right fit for the execution of modern warfighting. This is largely due to the acquisition of new enabling technologies, the modernisation of existing technologies and adaptation of their use to suit a multitude of operational roles. This flexibility relies not only on a detailed understanding of equipment but also the key functions that contribute to the overall artillery capability. These functions are not unique to artillery, but require an integrated approach to their execution that is unmatched by any other combat organisation.

The contribution of the three branches of artillery to the achievement of an integrated, functional capability is illustrated in the following hypothetical counter-insurgency scenario:

1. A jamming strobe is detected by gunners of the Air Land Regiment. By manipulating the thresholds and operating parameters of their sensors to overcome the jamming, the source is isolated, recorded and exploited to build an electronic intelligence picture of the battlespace. The gunners work closely with other elements of the brigade collection plan, feeding the brigade intelligence staff. The source of jamming becomes a target and is passed to the JFECC for addition to the target nomination list for future engagement, but is assessed as a preliminary operation for a hostile fire mission.

2. A mortar engagement by a previously undetected enemy indirect fire unit is tracked by the Air Land Regiment's weapon locating sensors. Automatic extrapolation of the likely point of impact determines that the round will land in a friendly force location, cueing an audible and visual warning for all friendly personnel within the danger radius, warning them to take cover. From the information provided by the lightweight counter mortar radar, a point of origin is established, facilitating the cross-cueing of unmanned aerial systems to the target location. The operations and intelligence staff confer and agree to move the unmanned aerial system off its current collection task and onto this new dynamic task.

3. On reaching the point of origin site, the unmanned aerial system observes a mortar baseplate with a three-man team firing on the friendly location. The brigade commander and operations officer consider their response options and agree that the JFECC can coordinate a JFE solution. Using target information from the unmanned aerial system via a remote operator video enhanced receiver downlink, a JFT moves into position to visually observe and positively identify the target. As a result of collateral damage estimate modelling, the forward
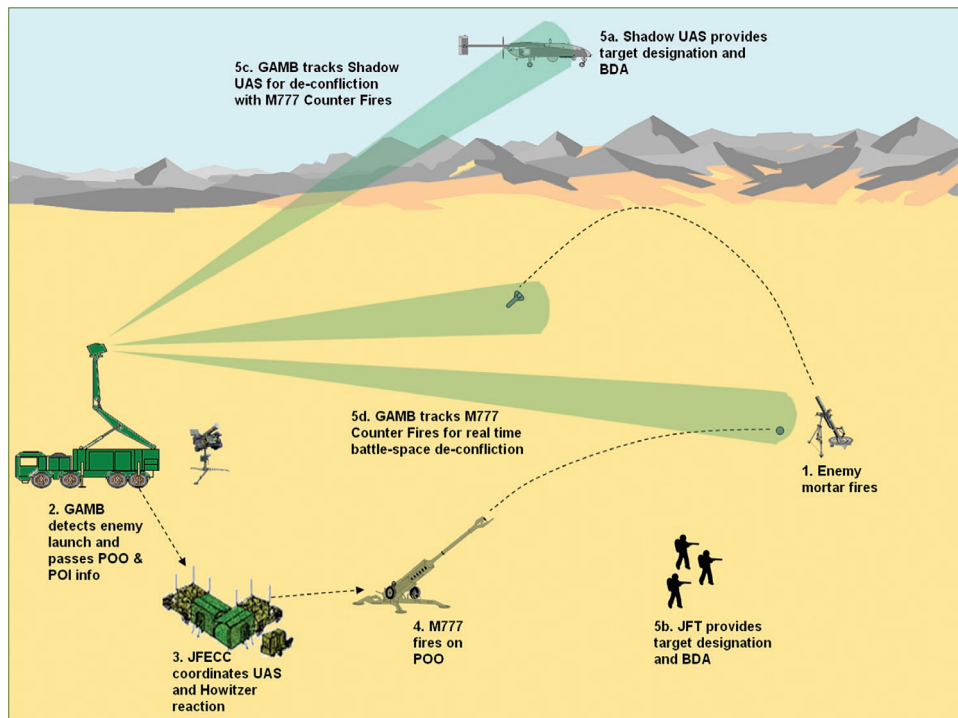
Figure 3. The tactical interrelationship of RAA elements

observer commanding the JFT determines that engagement by conventional munitions is unsafe and that engagement by precision-guided ordnance or terminally controlled close air support will be required.

4. Through the JFECC, the JFT provides local deconfliction for nearby air and land assets in preparation for target engagement and establishes the requisite control measures. With troops also in contact in another part of the area of operations, no close air support platforms are available to engage the mortar baseplate. The JFT orders a fire mission from his M777 howitzer battery and, just as they are about to engage, the Giraffe Agile Multi-Beam Radar detects a friendly helicopter transiting through the restricted operating zone. This results in a temporary pause in the engagement while communication is established with the aircraft. During this time, the hostile mortar team has managed to disassemble the baseplate and begins moving away from the site.

5. The unmanned aerial system tracks the mortar team to a small compound eight kilometres west of the initial point of origin where the team halts and enters the building. Target information is passed through the JFECC to a nearby infantry company which is assigned to interdict the enemy. As the infantry company moves into position it is engaged from inside the building with accurate small

arms and rocket-propelled grenade fire. The infantry company's JFT, coordinating with the JFECC for a handover of engagement authority from the initial JFT, cues a precision fire mission on the target given continued collateral damage limitations. Once cleared for engagement, the target round is observed by the JFT which watches as the compound and the mortar team are destroyed.

6. A battle damage assessment provided by the unmanned aerial system reports that one of the three members of the mortar team has survived the attack and is fleeing the compound. Observing the event via a remote operator video enhanced receiver terminal, the forward observer commanding the JFT requests the unmanned aerial system to track the suspected insurgent while the infantry company exploits the target location. As the insurgent flees the scene, another two enemy combatants are observed moving into an adjacent compound carrying what appears to be a long-barrelled weapon. Unable to maintain contact with the unmanned aerial system as it is now tracking the fleeing combatant, the JFT requests support from a helicopter while the remainder of the team tracks the target with binoculars. Shortly after arriving on station, the pilot is guided onto the target and reports that he has sighted the long-barrelled weapon. Once
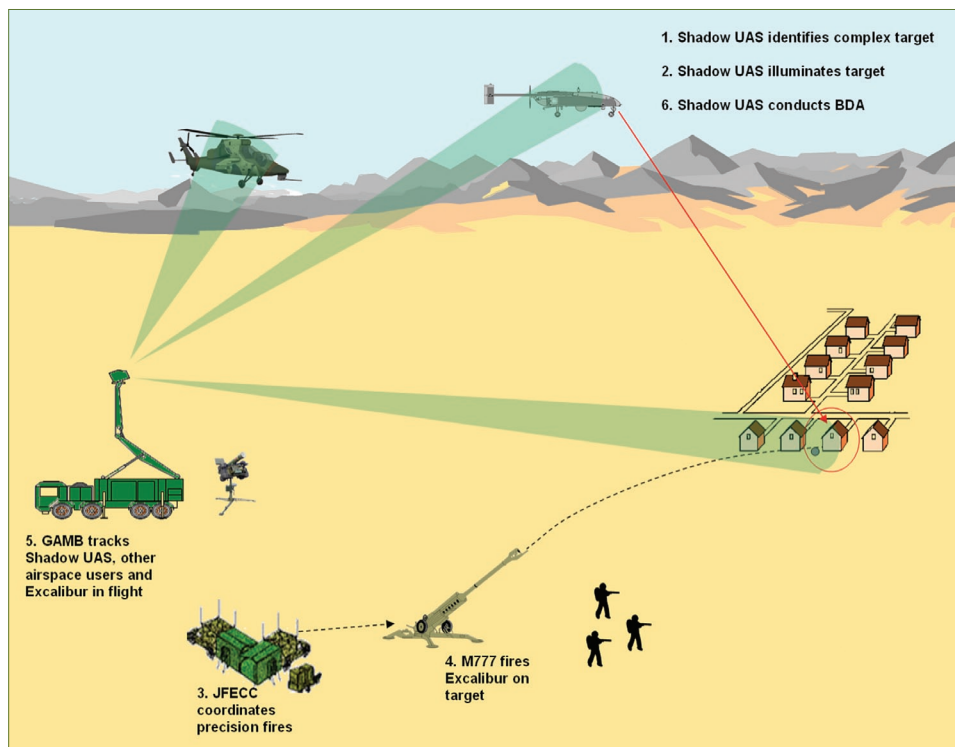

Figure 4. Locating, identifying and prosecuting targets with RAA elements

the forward line of own troops is verified, the joint terminal attack controller clears the helicopter for engagement resulting in the destruction of the target combatants with minimal effect on neighbouring compounds.

This scenario clearly demonstrates how the four key functions of artillery can be combined to create a unique capability with significant utility for operations well into the future. While the experiences and capability surges that resulted from counter-insurgency operations in Afghanistan were enormously beneficial for the RAA, these will not necessarily define the requirements of the next conventional conflict.

OBJECTIVE FORCE 2020: THE RAA ROADMAP

The RAA has energetically maintained its contribution to Army's operational commitment through the development of responsive, 'agile and flexible' forces.[6] The past decade of operational commitment has led to the creation of an artillery regiment that specialises in rapidly employed, increasingly precise fires capable of meeting the target discrimination thresholds of joint fires planners and manoeuvre arms commanders. These fires and effects are tactically mobile, increasingly all-weather and long range, and incorporate more air-delivered munitions and attack profiles than have previously been available.

Despite the value of the experiences gained from counter-insurgency operations in Afghanistan, the RAA now needs to refocus its training towards the conventional end of the warfighting spectrum. The next war may require the bludgeoning might of massed joint fires, the layered and integrated air and missile defences, highly mobile and responsive counter-fires missions, precision fires, airspace planning and deconfliction, and persistent surveillance. The next war may also occur in the Asia-Pacific region, be fought in the littoral environment and start sooner than expected. The experiences of Afghanistan have proven of immense value to the RAA but have not fully equipped it for the next war and each of the three RAA streams will need to continue its focus on future conflicts in the current operating environment.

> … counter-insurgency operations in Afghanistan were enormously beneficial for the RAA [but] will not necessarily define the requirements of the next conventional conflict.

JFE

Just as the Federal Government is incorporating a larger United States (US) military presence into Australia, the RAA will continue to emphasise the importance of joint aspects of fire support and the importance of international accreditation through close

ties with the US joint fires community. Currently the RAA's centre of excellence, the School of Artillery, is conducting the Joint Fires Observer program, accredited by the US Joint Staff and Joint Fire Support Executive Steering Committee and ratified by the Joint Fires Observer Memorandum of Agreement.[7] There is also an increased RAA assimilation in the ADF Joint Terminal Attack Controllers program at both the instructor and trainee level, which has resulted in an increase in the RAA's ability to operate a common air-ground picture in support of manoeuvre operations.

The RAA is also increasingly ready to support amphibious operations. The RAA's acquisition of the M777A2 155mm ultra-lightweight howitzer, combined with the modularity of gun batteries, has increased the gun line's readiness to support the embarked force, as has the increased training of JFTs in naval gunfire support missions under the Joint Fires Observer program.[8] These new lightweight howitzers, in addition to the enhanced JFTs incorporating joint terminal attack controller and joint forward observer capabilities, the highly capable tactical unmanned aerial system and the persistent surveillance suites, are high profile instruments contributing to the Army's ability to escalate or de-escalate the projection of force.

> The RAA has energetically maintained its contribution to Army's operational commitment through the development of responsive, 'agile and flexible' forces.

Further contributing to the Army's flexibility in the spectrum of conflict is the RAA's implementation of precision fires imagery generators and viewers at combat team level, and digital terminal control systems at platoon level. In addition, officers and soldiers alike are being offered increased training in collateral damage estimate methodology on RAA courses. Despite these advances to enable additional agility within the JFE force across all ends of the spectrum of conflict, it is foundation warfighting which must be emphasised as the 'core competency that the Government demands of Army'.[9]

GBAD, SENSE, WARN AND LOCATE, AND AIR-LAND INTEGRATION

The Air Land Regiment has shifted its focus from defeating enemy air assets to protecting the multi-role combat brigade and integrating the air-land battle. This subtle shift in focus is responsible for a radical shift in regimental culture and tactics. Foremost, this means possessing GBAD and locating capabilities that are protected, mobile and digitised, moving with and supporting the multi-role combat brigade in a conventional fight. It also means possessing highly trained and integrated personnel with enabling technologies sited across the theatre air control system to ensure that operations are effectively planned and communicated across the joint

and combined space. Finally, it means ensuring that all components of the regiment are capable of communicating and synchronising.

Provided that government funding for Land Project 19 Phase 7B continues, the 16 Air Land Regiment force protection capabilities will be revolutionised.[10] This remains critical for ensuring that future deployed forces receive appropriate levels of force protection from surface-to-surface fires and air threats. With the rapid acquisition of the Giraffe Agile Multi-Beam Radar, the Air Land Regiment now has the foundations for an extraordinary future capability. The RBS-70, despite being a capable short-range air defence system against helicopters and unmanned aerial vehicles, will be augmented or replaced with more capable systems that can fully protect the deployed force against the full set of likely air threats. Until its replacement, the focus for the RBS-70 will be mobile operations, operated from protected mobility air defence variants, fighting and communicating with the lead battlegroups of the multi-role combat brigade, to defeat rotary wing and unmanned aerial vehicle threats. The future force protection capability will need to move, fight and communicate in support of multi-role combat brigade operations, countering all likely threats.

> With three distinct capabilities within the one regiment, training officers and soldiers across all these disciplines will be a considerable challenge.

As the counter-rocket artillery, mortar capability exits Afghanistan, 16 Air Land Regiment will refocus from counter-rocket artillery, mortar towards a conventional locating capability, enabling counter-fires solutions in support of the multi-role combat brigade. The Giraffe Agile Multi-Beam Radar and lightweight counter mortar radars will remain central to this capability; however, the key shift will be in the transition from static sensor operations that provide warning only, towards mobile sensor operations which trigger fire missions in direct support of the multi-role combat brigades. Re-learning the art of locating will be a challenge to the unit — this will be a necessary skill for the next war.

In parallel to the development of the joint terminal attack controller capability, 16 Air Land Regiment has developed capability bricks which will improve the Army air-ground system component of the theatre air control system. These force elements are being equipped and trained to enable effective joint and combined integration for air-land operations. Such force elements include brigade and divisional level staff, trained and equipped, to enable air planning and resourcing in support of manoeuvre operations, at a level not previously realised in the Australian Army.

With three distinct capabilities within the one regiment, training officers and soldiers across all these disciplines will be a considerable challenge. To create

deployable capability bricks which can provide locating, integration and protection capabilities, the Air Land Regiment will retain a high-tempo training regime that attempts to parallel the force generation cycle of Plan Beersheba.

STA

The counter-insurgency environment has offered an invaluable proving ground for the Army unmanned aerial system capability and has demonstrated the capacity of its RAA operators to adapt and thrive in an unfamiliar role. Not unlike the Air Land Regiment, 20 STA Regiment will undoubtedly continue to feel the training stresses of force generation in the lead-up to Objective Force 2020. While the extent of the unmanned aerial system capability will continue to be explored and realised post-Afghanistan, an evolutionary shift away from reactionary support to manoeuvre forces must occur within the wider Army. Led by the procurement of the Shadow 200 system, Army's unmanned aerial system acquisition strategy to 2020 emphasises a shift in capability focus towards support for pre-planned intelligence-led operations and artillery targeting.

Fundamentally, the reliance on the provision of *platforms* must be replaced by the quality, accuracy, currency and relevance of the *information* they provide. This transition in operating mentalities represents a vital paradigm shift in the approach to contemporary warfighting. Through more scrupulous direction, provision, integration and management of ISTAR sensors and collection assets, operational manoeuvre scope can be drastically reduced to mission critical tasks only. Using the Afghanistan battlespace as a medium for translation, greater ISTAR provision in support of operations traditionally conducted by manoeuvre agencies can reduce the requirement for ground movement. This, in turn, immediately enhances land force protection by reducing operational risk and offers the tactical commander vastly superior combat information from which more specific and critical task-focused operations can be planned.

The RAA of 2020 is a highly flexible, adaptable and specialised organisation of superior technical and tactical competence in land and joint operations. Through the mutually supportive functions of JFE, air-land integration, GBAD, battlespace management, sensor coordination, ISTAR, artillery intelligence and support to joint targeting, RAA 2020 will represent a critical force capability in the modern battlespace. The provision of such a capability requires the acquisition, management and employment of appropriate artillery major systems, realistic and pervasive collective training of all the artillery streams, and inherent organisational flexibility within the RAA itself.

RISKS TO THE EVOLUTION OF THE RAA

Despite the overwhelming ambition of the RAA to maximise its joint capabilities in support of future land operations, a number of inherent risks exist that may

destroy this momentum. First, the RAA will be competing for a fair share of the 23% of the Defence budget apportioned to Army; under Project Land 17, in order to meet the Chief of Army's vision of 'highly protected … combined arms teams', the RAA had previously received approval for the acquisition of a fully armoured self-propelled howitzer system.[11] This capability was set to provide highly protected firepower and tactical mobility commensurate with the manoeuvre requirements of the combat teams and battlegroups they support under Plan Beersheba. The federal budget of 2012 saw a move away from this capability and towards a more agile field artillery capability with the acquisition of a further eighteen M777A2 howitzers.

While additional M777A2s will enable the application of digitally executed precision engagements, they are not the final word in providing agile offensive support to the army of 2020. The recent decision to retire the RAA's 105mm L119 Hamel gun has streamlined ammunition and fleet management, but is a risk to the potential agility of an embarked force as it executes ship-to-objective manoeuvre. L119s are not only capable of engaging with a smaller burst radius than the M777A2, but are also approximately half the weight.[12] L119s can be underslung by S-70 and MRH-90 rotary platforms, while simultaneously underslung with ammunition crates by a CH-47. The M777A2, though clearly a market-leading ultra-lightweight 155mm howitzer, may only be underslung by a CH-47.

In the amphibious environment, a central focus of the 2020 Objective Force deployment capability, the replacement of the L119 force not only increases the cubic meterage required for storage of the embarked JFE capability, but also limits the flexibility of deployment by air in support of the transition to land operations. Reinstating the L119 Hamel gun fleet and using the advanced field artillery tactical data system to replicate the existing digital relationship between JFTs and the gun line could easily mitigate these risks and would afford greater flexibility in amphibious employment.

> While additional M777A2s will enable the application of digitally executed precision engagements, they are not the final word in providing agile offensive support to the army of 2020.

Though the increased acquisition of the M777A2 is far from disappointing, it must be noted that the requirement for the self-propelled howitzer remains extant as long as the ADF retains a mechanised force capability. Media focus on the cost of Land 17 has rarely offered an explanation of the capability, or a comparison with the relative expense of other projects. It is therefore prudent to remember that "History has clearly demonstrated that 'peace dividends' invariably become 'peace liabilities' when the military must restore its capabilities when the next threat arrives."[13]

Another area of risk is the increasing gulf between the Regular Army and the Army Reserve. As highlighted under Plan Beersheba, Regular and Reserve forces must be fully complementary if they are to successfully implement government policy. Currently, RAA Reserve units are maintaining an offensive support capability through adopting mortar equipment, orders of battle, command and control structure, and tactics, techniques and procedures. These training models are not complementary to the integration of Reserve artillery forces into Regular orders of battle. This disparity can be mitigated through equipping the Reserve artillery with digital fire control systems, establishing a command and control structure to enable a Reserve JFECC to be fully interoperable with a Regular JFECC and increasing simulation training for Reserve JFTs.

It is also vital that the Royal Australian Navy (RAN) and the Royal Australian Air Force (RAAF) meet the RAA's march towards increased joint operations with the same vim and vigour. The RAA has already crossed the Rubicon by restructuring the former 16th Air Defence Regiment to become 16 Air Land Regiment as a unique capability to support the Army's link to air operations. The creation of 16 Air Land Regiment is the first step towards a joint air land unit which will better equip the ADF to meet air-land integration requirements in joint operations. It is critical for the viability of Army's air-land operations that 16 Air Land Regiment's capability is understood and reciprocated by air operations elements of the RAN and RAAF.

> It is also vital that the RAN and the RAAF meet the RAA's march towards increased joint operations with the same vim and vigour.

Finally, there is a risk to the future of the RAA after Afghanistan if the wrong people are recruited, screened and employed. The Regiment maintains a strong combat culture which has, at its heart, an intrinsically analytical quality. Under the remodelled trade structures the RAA has identified that those qualities that define an excellent gun number do not necessarily define an excellent radar operator. The contrasts between trades are innumerable but appreciable, and each demands unique physical and intellectual qualities. The RAA must be supported in its determination to select and train candidates considered most suitable for employment within each of its trade models — this begins at the recruiting level through aptitude testing, is continued through initial employment training for allocation to trade, and further into monitoring and suitability screening for specialist capability training. The RAA is strongly positioned to harness the full scope of recruiting successes, including the employment of women, across its new trade models. This strong position will be jeopardised if the RAA is constrained in its ability to select appropriate candidates for its wide variety of positions.

CONCLUSION

After decades of doubts over its future and challenges retaining its unique heritage and identity, the participation of the RAA in Afghanistan provided an opportunity to display and refine the artillery capability. The Afghanistan experiences have enabled the RAA to evolve, refining, enhancing and reinforcing its crucial role in the process. With the imminent conclusion to the Australian commitment in that theatre, the RAA will reconstitute and reorientate towards providing an invaluable capability for Army in future conflicts; this capability, however, may be entirely different to that required during its most recent deployments.

The artillery capability of 2020 will be unique, merging the mutually supportive functions of JFE, air-land integration, GBAD, battlespace management, sensor fusion, ISTAR collection, processing and dissemination, artillery intelligence and support to joint targeting. Achieving the artillery capability of 2020 will require appropriate artillery major systems, realistic and pervasive collective training of all the artillery streams, and the inherent flexibility of gunners as an organisation. There will be significant risks and challenges in achieving the artillery capability of 2020, but it must remain the focus of every gunner to meet those challenges and increase the capability of the Royal Regiment for years to come.

ENDNOTES

1   LWP-CA (OS) 5-3-2, Target Engagement, Coordination and Prediction – Duties In Action, Vol One, 2010, Chap 4, Para 4.2

2   HMSP-A Directive 29-09, *Army Force Modernisation Plan for the Royal Australian Artillery (Field Artillery) Capability*.

3   Minutes of the FORCOMD JTAC Synchronisation Conference – 28 February 2012.

4   P. Leahy, 'The Army in the air, developing land-air operations for a seamless force', *Australian Army Journal,* Vol. II, No. 2, Autumn 2005, Land Warfare Studies Centre, Canberra.

5   LTCOL N.J. Loynes, CO's message, accessed on : http://intranet.defence.gov.au/armyweb/Sites/20STAR/comweb.asp?page=48710&Title=Welcome (2012)

6   LTGEN D.L Morrison, AO, speech to the Sydney Institute, February 2012, accessed via www.army.gov.au

7   JCAS AP MOA 2010-01, Joint Fires Observer, 20 March 2012.

8   Morrison, address to Royal Australian Navy Maritime Conference, January 2011, accessed via www.army.gov.au

9   Morrison, speech to the Sydney Institute.

10   SGT A. Hetherington, 'Battlefield Tested', *Army News*, 17 February 2011.

11   Ibid.

12   M119/L119/L118 Performance Specifications (2000), accessed via Federation of American Scientist Military Analysis Network at http://www.fas.org/man/dod-101/sys/land/m119.htm

13   Ibid.

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TACTICS

NON-LINEAR MANOEUVRE

A PARADIGM SHIFT FOR THE DISMOUNTED COMBAT PLATOON

LIEUTENANT M.J. TINK

ABSTRACT

The evolving lethality and accuracy of weapon systems in the battlespace should drive dismounted combat platoons to continually modify Tactics, Techniques and Procedures in order to mitigate threats. Implementation of Manoeuvre Support Section down to Company and Platoon level combined with improving communication systems offer new opportunities for dismounted combat platoons to disperse and manoeuvre sub units far more effectively than ever previously seen. This article examines the ways in which dismounted platoon commanders may implement the intent of Army Capability Requirement, Infantry 2012 to achieve success in close combat, utilising the Infantry Battalion Modernisation 2012 model.

Success in Close Combat: Infantry forces will operate in smaller, semi-autonomous teams that adopt swarming tactics. They will be dispersed and ensure survivability by generating a tactical 'suppression envelope' of precise fires with enhanced situational awareness and mobility. When required they will concentrate their effects to overwhelm an enemy operating under battle control from an on-scene commander.

Army Capability Requirement, Infantry 2012[1]

INTRODUCTION

The last 50 years have witnessed significant technological advances in the lethality of weapon systems, in communication systems and in situational awareness on the battlefield. Land manoeuvre forces now possess the means to disperse further across the battlefield with commensurate security, yet infantry minor tactics have been slow to adapt and exploit the potential tactical advantages. Rather than exhibiting innovative tactics, techniques and procedures (TTPs) that complement technological advances and structural reforms within the company and platoon environments, TTPs appear, in fact, to be resisting change.

The recent introduction of manoeuvre support sections (MSS) down to infantry company and platoon level is one case in point. Implementation of the Infantry Battalion Modernisation 2012 (IBM) structure, complete with MSS, has the potential to provide significant additional capability to the modern rifle company. Company commanders are delivered greater organic firepower and options to concentrate three separate MSS into a manoeuvre support platoon (MSP) or detach each to the three rifle platoons. However, these options do not of themselves realise the full potential of IBM 2012. Rather, there needs to be a commensurate development of TTPs which exploit the non-linear manoeuvre options now available at platoon level.

Analysis of the platoon TTPs detailed in LWP-CA 3-3-1 Dismounted Minor Tactics (Developing Doctrine) reveals that these are

> The last 50 years have witnessed significant technological advances in the lethality of weapon systems, in communication systems and in situational awareness on the battlefield.

inconsistent with the characteristics of dismounted combat platoons as described in Table 1. Indeed, the TTPs fall short of realising the intent of Army Capability Requirement (ACR) Infantry 2012, specifically concerning the utilisation of small, semi-autonomous teams, swarming tactics, separation of command and control,

Table 1. Characteristics of Dismounted Combat Platoons[2]

Characteristics of dismounted combat platoons according to LWP-CA 3-3-1	
1.23	Small semi-autonomous teams
1.24	Task Organisation
1.25	Adaptive Action
1.26	Swarming Tactics
1.27	Suppression
1.28	Separation of Command and Control
1.29	Integration of Lethal and Non-Lethal Measures
1.30	Application of Fire
1.31	Devolved Situational Understanding
1.32	Robustness
1.33	Close Combat

and robustness. Utilising the MSS capability down to platoon level while still operating with pre-MSS dismounted doctrine will not realise the full potential of the resources and flexibility of command now available to the modern dismounted platoon commander.

The attachment of MSS to a dismounted platoon provides the commander with significantly greater flexibility. Platoon sub-units will be more resilient if the MSS firepower and weight of firepower is maximised to facilitate the freedom of bricks to manoeuvre. Under the IBM 2012 structure, MSS comprises a 12-man section made up of three 4-man manoeuvre support teams (MST). The MST is led by a team leader or commander armed with the standard F88 Austeyr assault rifle. The key firepower within the MST and the platoon as a whole is provided by the Mag58 carried by a gunner. The grenadier carries the grenade launcher attachment and, if deemed appropriate for the mission, will also carry the 84mm Carl Gustav, providing the MST's explosive capability. The fourth member of the MST is the sharpshooter or 'squad designated marksman' to use the terminology favoured by coalition nations. Currently, the MST sharpshooter in Australian infantry battalions carries the Heckler and Koch 417 (HK-417).

These changes to platoon manning have increased the size of a platoon under the IBM structure to some 40 or more personnel. TTPs that restrict the IBM 2012 platoon to operating as a single manoeuvre element in almost all operational environments

will not realise the full potential of MSS. Indeed, the signature generated by the size of this single manoeuvre force is so significant that it reduces its ability to remain concealed in order to seek out and close with an enemy element, particularly one with modern intelligence, surveillance, target acquisition and reconnaissance capabilities. The attachment of MSS down to platoon level provides the modern platoon commander far greater flexibility and this will need to be better reflected in future doctrine and TTPs.

This article will examine how dismounted platoon commanders can utilise the IBM 2012 model to realise the intent of ACR Infantry 2012 to achieve success in close combat. Alternative methods for infantry platoons that seek to operate in non-linear, dispersed, smaller, semi-autonomous teams will also be analysed. Part of this analysis will focus on swarming tactics that generate a tactical suppression envelope which ensures survivability in the future battlespace. The characteristics of dismounted combat platoons as detailed in LWP-CA 3-3-1 will also be examined as part of this analysis.

HOW COULD THE DISMOUNTED COMBAT PLATOON OPERATE DIFFERENTLY?

Increasingly dispersed operations are inevitable — part of a natural battlefield evolution given the growing lethality of modern weapons and improved communication and information systems.[3] For this reason, greater dispersion should be a prime consideration for modern dismounted platoon commanders under the IBM 2012 system. The standard MSS deployment by a majority of dismounted platoon commanders involves the callsign and platoon manoeuvring as a complete element. MSS is often broken down into separate MST and attached to another section or patrol as a complete section, located in the vicinity of platoon headquarters (PHQ). Depending on the nature of the terrain, the platoon position can extend anywhere up to 300 metres. This method of deployment is reminiscent of pre-MSS dismounted doctrine, which ignores the full potential of the IBM 2012 model. Current platoon formations incorporating MSS lack

> Platoon sub-units will be more resilient if the MSS firepower and weight of firepower is maximised to facilitate the freedom of bricks to manoeuvre.

responsiveness, flexibility and manoeuvrability. The single platoon entity is predictable, easy to target and remains conspicuously above the detection threshold. Although this method of patrolling should not be entirely discounted, more variation in the way dismounted platoons operate will be required to more effectively utilise assigned assets.

SWARM TACTICS THROUGH DISPERSED PATROLLING

ACR Infantry 2012 and LWP-CA 3-3-1 describe swarm tactics as highly successful in close combat. Swarm tactics refer to non-linear manoeuvre by several units conducting a convergent attack on a target from multiple axes utilising either long-range or short-range fires coordinated by an on-scene commander.[4] Swarming does not necessitate surrounding the enemy; rather, the emphasis is on forces or fires that can strike at will. Examples of swarm tactics abound throughout history in both the natural and human worlds with well-timed, multidirectional assaults from ants, bees and wolf packs to ancient Parthians and medieval Mongols.[5] Today's insurgents use swarming as a form of asymmetric warfare against superior conventional armies from the mountains of Afghanistan to the cities of Iraq with varying degrees of success.[6] Swarming in force or by fire has often proven a very effective way of fighting, but it is only now that it is evolving as a doctrine in its own right. This is because swarming largely depends on the devolution of authority to small units and an ability to interconnect those units, something that has only recently become feasible with the improved firepower and developing communications systems of the IBM 2012 model.[7]

By attaching a MST to each of his sections, the platoon commander holds three 12-man manoeuvre elements (three section model — see Figure 1).[8] Each can theoretically provide its own security (depending on the threat) and engage targets at a distance of anywhere up to 2000 metres utilising the Mag58. Ideally, PHQ should be split across two sections. The platoon commander and signaller should be positioned within a forward section, while the platoon sergeant and platoon medic should be located within a section patrolling in depth. Including PHQ attachments, the strength of the three manoeuvre sections now sits at 14, 14 and 12. By dispersing these three manoeuvre sections along or across a patrol route and allowing them to manoeuvre independently of one another, the sections will still be close enough to provide intimate support if required (the distance of dispersal will depend on the terrain and threat). In this way, the platoon commander not only reduces his signature on the ground, but will also achieve a far greater level of surprise against an enemy which may initially assume that it has contacted a section plus element. With the range and weight of firepower now available down to section level and improved communication systems organic to the platoon, the platoon commander has the ability to significantly increase the level of dispersion between each section, provided that the correct control measures have been implemented and rehearsed.

On contact with an enemy element, the platoon commander may allocate battle control to an on-scene commander until he arrives in location and can assume control. With the platoon operating as dispersed manoeuvre sections, swarm tactics can be utilised, with sections converging rapidly on a target from multiple directions
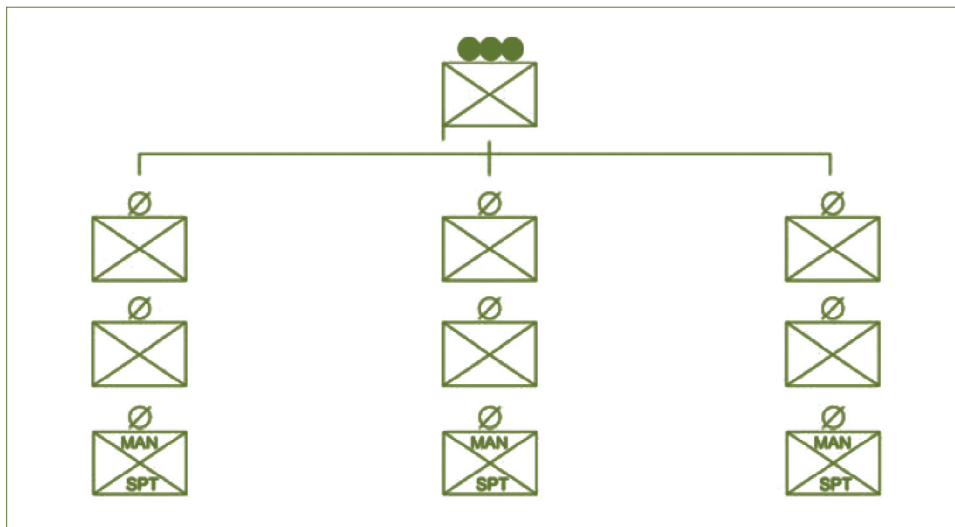
Figure 1. Three Section Model[9]

(governed by control measures to prevent fratricide), utilising long-range or close-range fires to fix and destroy the enemy element coordinated by a variety of communication systems previously not available. Figure 2 illustrates a possible swarming scenario. It is important to note that, during an assault, depth may be provided by the section conducting the assault (depending on the size of the enemy force) as it has an additional fire team at the on-scene commander's disposal. Alternatively, depth may be provided by manoeuvre elements not in contact.

Depending on the scenario, the platoon commander may utilise alternative methods looking to achieve a push or pull effect. Circumstances may dictate that one of the manoeuvre sections creates a pull effect (Figure 3) by withdrawing through a designated engagement area, established by one or both of the remaining manoeuvre sections. Alternatively, the on-scene commander can exert a push effect by establishing and maintaining engagement utilising two manoeuvre elements and forcing the enemy to withdraw into a cut-off or blocking force established by the third manoeuvre section.

A conventional infantry platoon operating in mass provides an initial single linear threat to an enemy. The platoon may manoeuvre to threaten a flank or rear; however, such tactics are normally time consuming and likely to be detected. Unless direct or indirect fire is effective opportunities will exist for the enemy force to withdraw where it feels threatened by a superior force.

In contrast, swarming tactics are more likely to achieve a force multiplier effect both physically and psychologically. In circumstances where the enemy perceives that it has engaged a single section, the opportunity for surprise is considerably
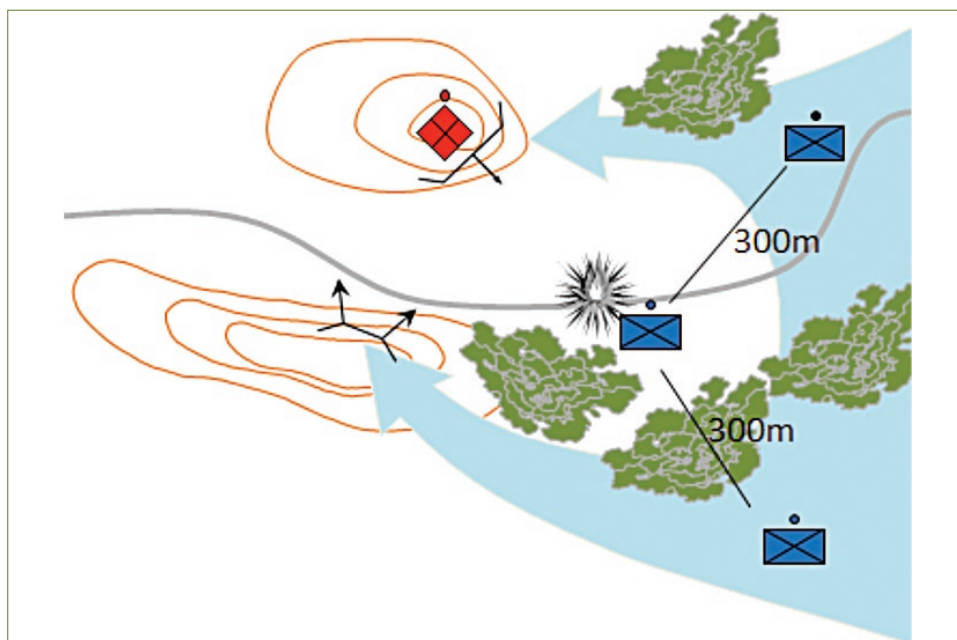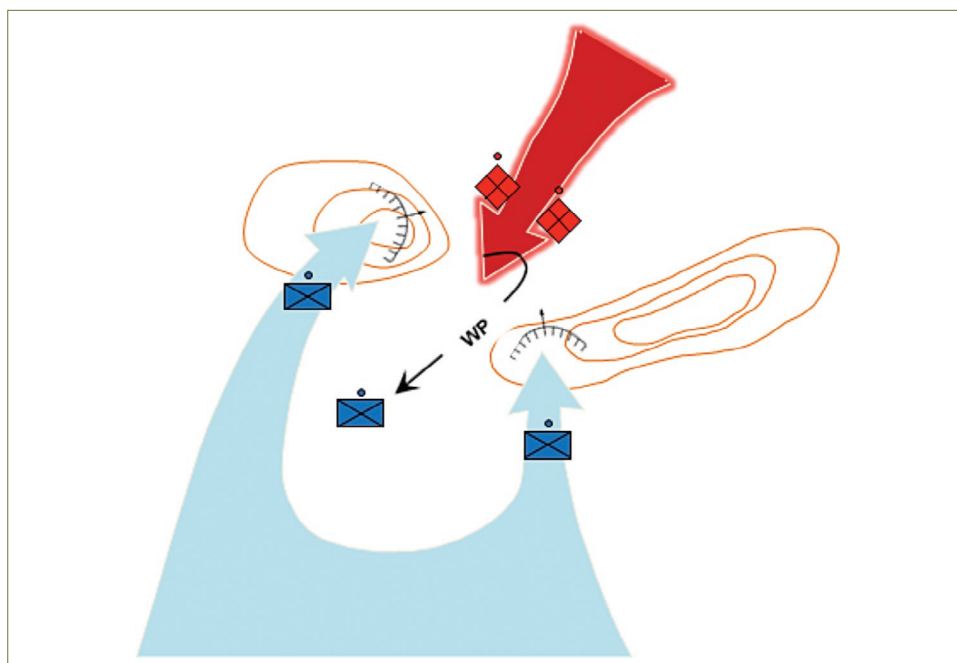
Figure 2. Swarming

Figure 3. Utilising a Pull Effect

enhanced. Flanking semi-autonomous sections, not identified in the initial engagement, may simultaneously or successively engage in surprise attacks on the enemy flanks and to its rear. This will create confusion within the enemy over the direction of the main effort, its forces surprised by unexpected assaults and shocked by the realisation that their withdrawal route is cut off, thus destroying their will to fight.

Further mission and threat-specific alterations can be made to the composition of these manoeuvre sections. Should he utilise the 84mm Carl Gustav with one of the manoeuvre sections, the platoon commander will have a light-skinned vehicle, hunter/killer group at his disposal. He can manoeuvre this group to the rear or flanks of the other two elements, closest to the most likely approach of enemy vehicles. Ideally, two 84mms should be utilised in mutual support, allowing the platoon commander to develop a manoeuvre section comprising two MST and a brick from another section. This would still leave him with three manoeuvre sections. In conjunction with this option, the platoon commander may also utilise the Mag58s at section level by having light support weapon (LSW) gunners who are qualified on the Mag58. This alteration will force the platoon commander to decide between the LSW's mobility advantage as opposed to the Mag58's weight of firepower and range overmatch.

> Swarm tactics refer to non-linear manoeuvre by several units conducting a convergent attack on a target from multiple axes utilising either long-range or short-range fires coordinated by an on-scene commander

Depending on the terrain, the platoon commander may also look to utilise MSS complete as a bounding, organic overwatch position situated on key terrain within an area of operations. The positioned MSS can be incorporated with dispersed sections on the terrain below, capitalising on the relative security now provided by the increased firepower and weight of firepower organic to the IBM 2012 platoon (see Figure 4). This is a good example of the flexibility now available to the modern dismounted platoon commander as he is no longer as reliant on the direct fire support weapons platoon to provide that integral fire support when needed. Once on the ground he can adapt his scheme of manoeuvre as necessary.

SATELLITE PATROLLING

Should the threat dictate that the platoon remain relatively congregated, the use of satellite patrols can provide security, physical depth and increased situational awareness. This means of patrolling, frequently ignored in Australian doctrine, can
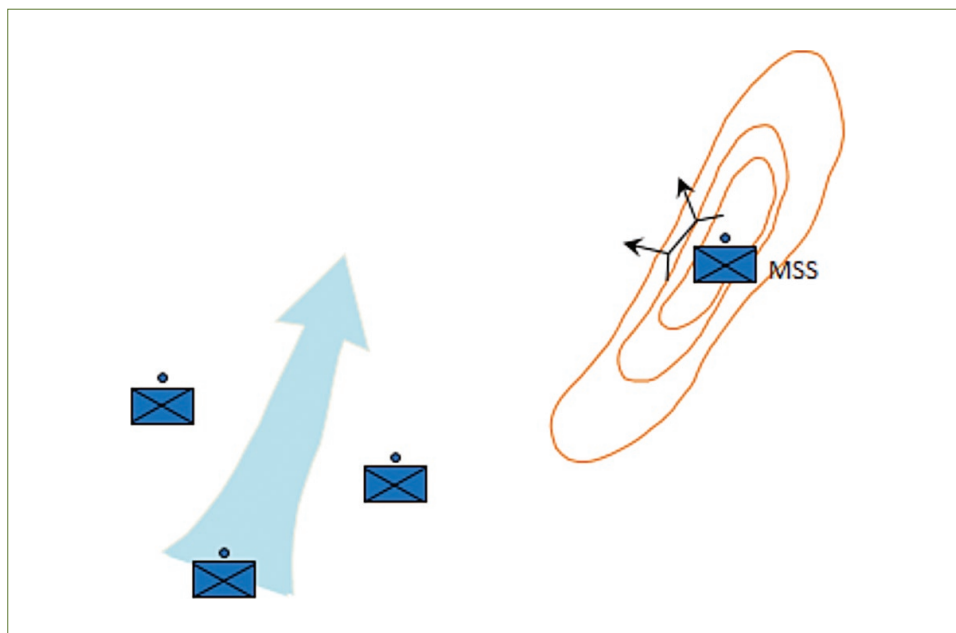
Figure 4. Organic Overwatch provided by MSS

be utilised to deter ambushes, snipers and command detonation of IEDs. Satellite patrols utilise a base unit which controls smaller satellite units that leave and return to the base unit during the conduct of a patrol.[10] The aim of the satellite unit is to increase the 'buffer zone' between the threat and the main body.[11] This tactic forces the threat to increase its distance from the main body or risk being caught between the patrol elements.

The advantage of satellite patrolling lies in its unpredictability to the enemy.[12] The size of friendly forces, location and overall axis of patrol remain unclear to enemy intelligence, surveillance and reconnaissance if executed correctly. In addition, the platoon commander still has a manoeuvre element(s) available to use on contact with the enemy. As described in FM 3-24.2 *Tactics in Counter Insurgency*, the organisation of the patrol should incorporate as a minimum one base and one satellite unit, the size of each unit dictated by the situation on the ground.[13] With the incorporation of MSS at platoon level, the commander now has a plethora of possibilities at his disposal to suit the mission requirements. By applying the three section model, the platoon commander can utilise one of the sections as a satellite unit, patrolling in proximity to the base unit. The satellite patrol can move away from the base unit for short periods of time, identifying and investigating locations that can be used as command positions for neighbouring IEDs and clearing dead spaces or potential ambush sites (see Figure 5).
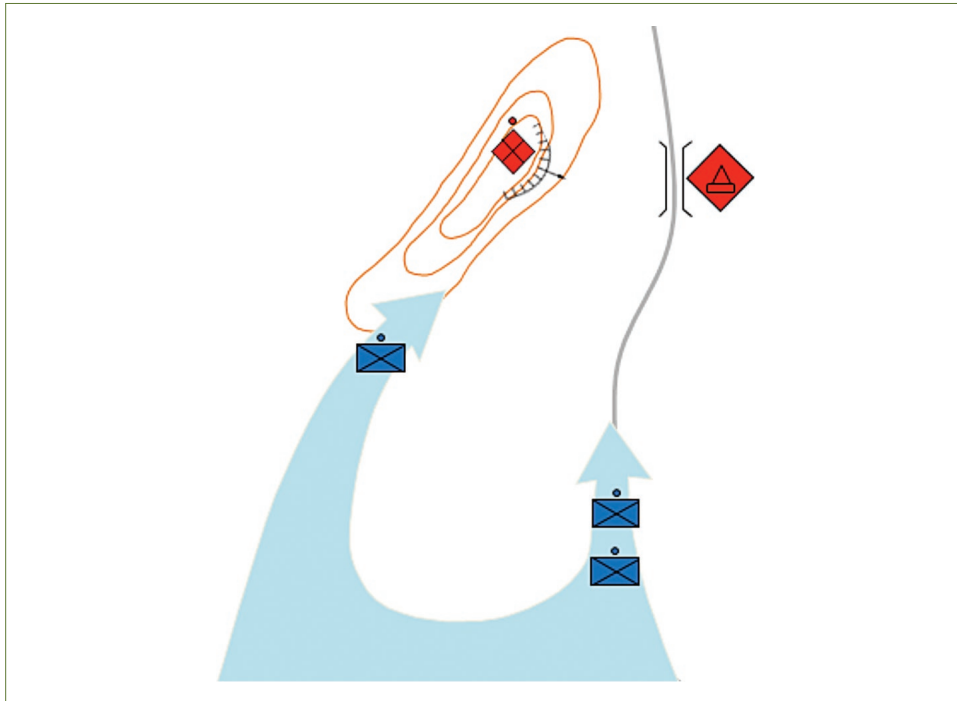
Figure 5. Satellite Patrol investigating Potential Ambush Location

CONCLUSION

In future conflict it is widely accepted that the Australian Army will have to learn to fight nimbly against an array of armed adversaries who are likely do all they can to avoid the confrontation of a traditional force-on-force battle. By reducing signature and predictability, increasing responsiveness, improving manoeuvrability and empowering section commanders with far greater mission command, well-rehearsed dispersed patrolling and swarm tactics will allow platoon commanders to take full advantage of the benefits that the IBM 2012 structure provides. The alternative methods discussed in this article are a base level for platoon commanders to begin delving deeper into the possibilities and variations to TTPs now available with the IBM 2012 structure. As the characteristics of dismounted combat platoons within LWP-CA 3-3-1 increasingly dictate the use of small, semi-autonomous teams and

The platoon may manoeuvre to threaten a flank or rear; however, such tactics are normally time consuming and likely to be detected..

swarm tactics, further development of TTPs needs to occur. Only when TTPs are more closely aligned with these characteristics can the overarching intent of ACR Infantry 2012 and its vision for success in close combat be achieved.

ENDNOTES

1   Land Warfare Development Centre, *Army Capability Requirement, Infantry 2012,* Puckapunyal, 2006, para 2.14.

2   Ibid.

3   S.J.A. Edwards, *Swarming on the Battlefield: Past, Present and Future*, RAND Corporation, USA, 2000, Chapter 5, p. 69.

4   S.J.A. Edwards, *Swarming and the future of Warfare*, RAND Corporation, USA, 2004, Abstract.

5   J. Arquilla and D. Ronfeldt, *Swarming & The Future of Conflict*, RAND Corporation, USA, 2000, Summary, p. VIII.

6   Edwards, *Swarming and the future of Warfare*, Abstract.

7   Arquilla and Ronfeldt, *Swarming & The Future of Conflict*, Summary, p. VI.

8   LWP-CA (DMTD CBT) 3-3-1, *Dismounted Minor Tactics 2010*, para 2.51.

9   Ibid., Figure 2-7.

10 FMI 3-24.2, *Tactics in Counter Insurgency,* 2009, para 5-212.

11 'Ideas and Issues – Snipers', *Marine Corps Gazette*, September 2007, p. 44.

12 FMI 3-24.2 *Tactics in Counter Insurgency,* para 5-212.

13 Ibid., paras 5-213, 214.

THE AUTHOR

Lieutenant Matthew Tink is an Infantry Officer in the Australian Regular Army. He is a graduate of the University of Sydney and the Royal Military College – Duntroon. Currently he is serving as a Rifle Platoon Commander with the First Battalion, Royal Australian Regiment. He has an ardent interest in the application of sub unit tactics and leadership in the future battlespace.

BOOK REVIEW

Hugh White, *The China Choice: Why America Should Share Power*,
Black Inc., 2012, 208 pp

**Reviewed by Andrew O'Neil, Professor in the School of Government
and International Relations at Griffith University and Director of the
Griffith Asia Institute**

After a period in which numerous observers claimed that relations between
states were becoming a secondary consideration with the rise of globalisa-
tion and its symptoms such as jihadist terrorism, geopolitics has returned to
international relations with a vengeance. Predictions that states would be rendered
marginal actors in a system dominated by supranational forces have (once again)
proven premature. In terms of the forces shaping the key dynamics of international
relations, the biggest game in town (once again) is relations between great powers,
and there is nothing bigger in the current context than the relationship between the
US and China.

Hugh White is Australia's leading strategic thinker and subscribes to a defensive
realist perspective of international relations. Defensive realists believe that states
jockey to maximise their power in an anarchic international system, but they claim
that states only seek as much power as they need to defend their sovereignty and
national interests. This is in contrast to offensive realists of the John Mearsheimer
variety, who maintain that structural anarchy impels states to accumulate power
for offensive purposes, in order to dominate others. For Hugh White and other
defensive realists such as Charles Glaser, great power rivals are capable of managing
the security dilemma without spiralling into conflict, whereas offensive realists
believe that conflict between rival great powers is inevitable.

The China Choice: Why America Should Share Power represents an important
contribution to the literature on US-China relations. Anyone remotely familiar
with Hugh White's writing will appreciate the book's strengths: crisp prose, plain,
jargon-free, language, and incisive analysis that draws on deep experience in govern-
ment where a premium is placed on writing that 'cuts through'— the book's very

subtitle captures White's thesis. Those who have read White's 2010 *Monthly Essay* will recognise the book's central argument: the US is losing ground to China and Washington must cut a power-sharing deal with Beijing to avoid conflict, which will be the likely consequence if the US attempts to preserve its post-1945 strategic dominance in Asia. White's preferred modality for achieving this power-sharing arrangement is an Asian concert of powers based on great powers agreeing that they will 'not try to dominate one another' (p. 136).

White has clearly sought to address the criticisms of his 2010 essay with a more nuanced description of the dynamics of Sino-American relations and a fuller intellectual engagement with the concert of powers idea. The final substantive chapter also addresses some of the major counter-arguments against his proposal, including the one that got the most popular airplay in 2010 — that his argument is tantamount to appeasement. He does this largely successfully, albeit too briefly for this reviewer who would have preferred to see a more detailed outline of the counter-arguments, especially the tricky challenge of bridging the democratic-authoritarian governance divide between the US and China to avoid mutual misperceptions.

The China Challenge is a stimulating read. However, it does contain flaws. White (like many others) equates China's economic power with crude GDP growth and identifies this as the clinching evidence that China will surpass the US in the next decade or so. Yet, there are many other qualitative indicators of economic strength that are not addressed, including the capacity for world class innovation in key economic sectors, something the Chinese are still getting their heads around. Many Chinese themselves readily concede in private conversations that they still lag behind *Japan* in terms of the quality of the outputs they produce. Another shortcoming of the book is its tendency to dismiss arguments against the concert of powers proposal. One of Australia's other leading strategists, Hedley Bull, wrote about the danger of great power concerts for middle and small powers in the early 1970s —that they faced being marginalised and dominated by stronger states. There is no compelling reason to think that an Asian concert of powers would be any less stifling for Australia than it was for secondary states in 19th century Europe. Finally, on the subject of middle powers, it is curious that *The China Challenge* essentially overlooks the pivotal role of Indonesia (which rates a single mention, on p. 61), the country that Beijing prefers to deal with in relation to all ASEAN-related issues regarding the South China Sea dispute.

All of these shortcomings are real, but at the end of the day do not detract from White's ability to craft a strong narrative, backed up by intellectual rigour and analytical precision. Indeed White's arguments provide hope that there is still the potential to have a sensible conversation about how America's changing role in Asia in the 21st century can be managed in the context of its relative decline.

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BOOK REVIEW

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Theodore K. Raab, *The Artist and the Warrior: Military History through the Eyes of the Masters*, Yale University Press, 2011, 228 pp

Reviewed by Dr Claire Baddeley, Senior Curator of Art, Australian War Memorial

The preoccupation with war and its representation has long been the subject matter of artists. Whether recording battles or the heroism and suffering of war's protagonists, artists have depicted conflict in its many forms over the centuries. From early images in Egyptian and Roman art through to contemporary works of art, military history has proven fertile ground for creative responses to war. Theodore K. Rabb's *The Artist and the Warrior: Military History through the Eyes of the Masters* is a book that articulately blends the worlds of war and art into a highly readable and engaging book.

In each of his chapters, Rabb moves chronologically through the wide terrain of European art, selecting masterpieces by well-known artists and sculptors such as Donatello, Uccello, Titian, Velázquez, Rubens, Goya, Manet and Picasso. His choice of works of art in this richly illustrated publication allows close analysis of the way in which artists have responded to war. They reveal something of the art-historical, conceptual and aesthetic contexts in which they were created as well as the history of events, battles, individuals and warfare over time.

The discussion of individual artworks is successfully interwoven with a detailed narrative of the history of military practices including technological developments and inventions from gunpowder to poisonous gases. While the works of art selected are from the Western tradition, the focus shifts on a number of occasions to war art from Japan, India and the Middle East. Although this detour complements the masterpieces chosen, their inclusion appears tokenistic and fragments the discussion of the ambitious array of visual reactions to warfare. This leaves the reader yearning to dip into the comparative history of war art in non-Western traditions, a topic that is beyond the scope of this publication.

The book ranges widely, from antiquity to the last century. It begins with the ancient world, focusing on the Stones of Nineveh. From here the course is charted

through Rome and the Middle Ages, the Renaissance, and the sixteenth to the nineteenth centuries, before it concludes with a chapter entitled 'The Pity of War: Modern Times'. The military and technological transformations from gunpowder in the fourteenth century to industrialised warfare in the last century foreground each chapter. This provides a lucid military historical context against which individual paintings, sculptures, works on paper, photographs, monuments and finally film are analysed. Throughout the book shifting attitudes to war through art are broadly examined — from heroism and triumph to suffering and inhumanity.

The book's breadth is both its strength and its weakness and its multidisciplinary nature promises an audience of both military historians and art historians. It will probably appeal most, however, to those who take a more extended view of military history, as it moves beyond details of the manoeuvres of individual battles to the social, cultural and economic context of warfare. Few other studies of war art provide such comprehensive details of the evolving nature of warfare, along with shifting artistic and social perceptions of war itself.

Despite the author's admission that it is not 'an enterprise of primary research', the inclusion of quotes, where possible, from the individual artists whose works feature in this well-researched book would have been beneficial. How did the artists feel about their subject matter? How did they construct scenes of battle which they did not witness themselves? What meanings did they intend to convey through images of the most heroic and tragic aspects of warfare?

The Artist and the Warrior: Military History through the Eyes of the Masters can be criticised for this lack of use of original material and its reliance on secondary sources to analyse the ongoing relationship between art and war. The decision by the author to somewhat abruptly end at the 1930s is also of concern, since it means the military and artistic history of major conflicts such as the Second World War and the Vietnam War are not analysed. Rabb argues that the later twentieth century has produced far fewer divergent responses to war, with little new direction in artistic imagery beyond that which comments on its violence, anguish and tragedy. This is a questionable claim and does not take into account the work of official war artists appointed in Australia, Canada, Great Britain and New Zealand who objectively recorded conflicts, works of art by prisoners of war, or the many humorous responses to war through cartoons and caricatures which variously provided relief, critique and entertainment both for those exposed to war and the fortunate others who were not.

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BOOK REVIEW

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Peter Williams, *The Kokoda Campaign 1942: Myth and Reality*, Cambridge, Melbourne, 2012, 304 pp

Reviewed by Lieutenant Colonel Gavin Keating, SO1 Amphibious Development, Deployable Joint Force Headquarters

Mythology plays an important role in the way that societies frame their histories and this is particularly true for the profession of arms. Australia's military history offers numerous examples of this phenomenon — Breaker Morant, the landings at Gallipoli, the Rats of Tobruk and the Battle of Long Tan have all been mythologised to varying degrees. This process can play a useful part in developing national pride. However, as *Redgum*'s popular song *I Was Only Nineteen* puts it, 'the Anzac legends didn't mention mud and blood and tears.'

Peter Williams' *The Kokoda Campaign 1942: Myth and Reality* seeks to tackle one of Australia's most mythologised military events. He focuses on the period between July 1942, when the Japanese first landed in Papua, and November when they were comprehensively defeated at Oivi-Gorari. The book's central thesis holds that the constant retelling of the story of the campaign has distorted its realities in a way that makes it very difficult to accurately understand the campaign itself. Williams assesses that the core of the Kokoda myth lies in the belief that it was 'the large Japanese numerical superiority that enabled them to advance as far as they did towards Port Moresby.' In his view, the unquestioning acceptance of this belief has served to conceal other reasons for the series of defeats suffered by the Australians during the first stages of fighting. Moreover, it has served to support other myths, such as that the Australians inflicted high casualties on their advancing enemies, which have only further confused the historical record.

While many Australian historians are now using Japanese sources to cover this campaign, Williams has made a particular effort to exploit these sources. As he notes in his introduction, 'if we try to explain an historical event involving two belligerents using sources from only one of them, then we should hardly expect to get it right.' He makes extensive use of the records of the Japanese units comprising the *Nankai*

Shitai (South Seas Detachment), particularly manning and casualty reports. These allow him to demonstrate that the Australian forces on the Kokoda Track were never outnumbered to the extent that they believed, or which later became accepted as fact. During the opening skirmishes they were outnumbered by one and a half to one and, at the first major battle, at Isurava in late August, the numbers were even. At their last major defeat, at Ioribaiwa in mid-September, the Australians withdrew from a strong defensive position despite outnumbering the Japanese almost two to one. Thereafter, when the Australians went on the offensive, they maintained numerical superiority for the remainder of the campaign.

Much of the book attempts to explain the real reasons for the *Nankai Shitai*'s successes during the first half of the campaign. In doing so Williams tackles a number of the related myths surrounding the fighting. The Japanese were actually well informed on conditions on the Kokoda Track thanks to a comprehensive intelligence collection program which had begun in the 1930s. They supplemented their own reconnaissance with information provided by German sympathisers living in New Guinea and open source material purchased in Australia. Many popular accounts of the campaign highlight the supply problems encountered by the Japanese as a major factor in their final defeat. The Japanese supply system, while austere by Western standards, was actually well organised and optimised to suit light forces operating in difficult terrain. There was a supply crisis during the campaign, but it lasted for less than six weeks, was caused by massive flooding in September, and impacted on only a small part of the total Japanese force, albeit with significant consequences. Similarly, the Japanese medical system proved effective and illness had more of an impact on the Australians, at least until December, when the Japanese had been pushed back to the Buna-Gona beachheads. Williams credits the Japanese superiority in firepower as a significant contributor to their successes. They had considerable experience in employing mountain artillery and used their 37mm, 70mm and 75mm guns to consistently outmatch the Australians, whose light mortars and machine-guns were inferior in range and firepower.

Perhaps the most valuable contribution made by this book is to place the campaign within its wider strategic context. The single most important factor that influenced the Japanese conduct of the Kokoda campaign was the US invasion of Guadalcanal in August 1942. Within days of this development Major General Horii Tomitaro, commander of the *Nankai Shitai*, was ordered to maintain the bulk of his forces north of the Owen Stanley Range and delay his advance on Port Moresby. The four infantry battalions that continued to advance south from Isurava were only ever intended to secure a favourable position on the southern side of mountains in preparation for the moment Horii was released to resume the offensive. The diversion of large numbers of Japanese troops to reinforce the ultimately futile defence of Guadalcanal meant that this never eventuated. Williams concludes that

it is more accurate to argue that it was the US Marines at Guadalcanal who were most important in Port Moresby's salvation rather than the Australians fighting along the Kokoda Track.

Early in the book the author asks whether it was the qualitative superiority of the Japanese which accounted for their early successes. His detailed examination of the fighting provides examples of tactical flair and ineptitude on both sides. While the Japanese generally outmanoeuvred their opponents during their initial advance, they fell far short of being 'super jungle soldiers'. On at least two occasions entire Japanese battalions became badly lost trying to outflank the Australians; during the first major battle along the Kokoda Track this enabled the defenders to escape what would otherwise have been a severe defeat. It was not until the victory at Oivi-Gorari that clear evidence of the Australians achieving a qualitative superiority over their enemy emerged. By this time most of the Australians involved in the early fighting had been replaced with fresh troops.

Military mythology may well play an important role in the way societies think about their wartime histories. However, by obscuring some of the less glorious truths about war, it can act as a double-edged sword. Distorted history does little to assist today's military professionals to study the past as they prepare themselves for future conflicts. *The Kokoda Campaign 1942: Myth and Reality* provides a more accurate and nuanced understanding of a campaign that has a great deal to teach those willing to look beyond popular misconception and understand what really occurred during those difficult days.

BOOK REVIEW

Major General John Cantwell (Retd) with Greg Bearup, *Exit Wounds: One Australian's War on Terror*, Melbourne University Press, Melbourne, 2012, 374 pp

Reviewed by Dr John Blaxland, Senior Fellow, Strategic and Defence Studies Centre

Wow! This book is hard to put down. At first I was a bit reluctant to purchase a copy, assuming from the cover that the book was a little self-indulgent. After all, Major General John Cantwell had a dream career and one that many others envied. So why did he write what was ostensibly a 'poor me' story? Well, my preconceived ideas were quickly displaced by a gripping and captivating account brimming with stories covering the full range of emotions from excitement to anger to elation, to despair and to love. Cantwell pulls no punches in revealing his inner thoughts and fears and in describing his many trials and tribulations.

John Cantwell begins his account by describing his manoeuvering to be included in the contingent deploying to the Gulf War in 1990–1991, following this with a number of important insights into his experience in Iraq in 2006 and in Afghanistan in 2010. He explains his personal motives and the cost he was imposing on his family. He speaks of the visceral fear of being targeted by an Apache helicopter while in no man's land in Iraq in the middle of a battle, and of the sight of dismembered and disfigured enemy remains. These are memories that would haunt and torment him for over two decades.

In the absence of a detailed and open account of Australia's military involvement in the wars of Iraq and Afghanistan, this book provides some important and useful insights into a significant chapter in Australia's military history. It is telling, though, that no official historian has yet been appointed to write the history of Australia's involvement in these conflicts. In the meantime, the records of the time are being haphazardly maintained, with little thought to their preservation so as to allow an accurate and balanced account eventually to be written of these events — one that doesn't rely solely on oral interviews with participants.

Yet this book's significance lies beyond simply providing an important adjunct to the historical picture. It is significant in that it places the issue of post traumatic stress disorder (PTSD) firmly in the central spotlight for Defence planners, managers and commanders and for the Australian community as a whole.

The fact that John Cantwell — a major general — could write this account continues to be of enormous assistance to those affected by PTSD both directly and indirectly. At last someone of high rank has publicly described his personal battle in an attempt to demystify the condition. This ground-breaking book has opened the door for people who are hurting to deal with the pain and the consequences of this disorder. We all owe Major General John Cantwell a debt of gratitude for having the courage and temerity to write this book (and, to Melbourne University Press and Greg Bearup, hearty congratulations for having believed in the project and having backed it so well).

This book changes the ground rules for the Australian Defence Force and, in particular, the Australian Amy. The change should be welcomed. Soldiers and commanders should read this and reflect on their own circumstances and on those of the men and women for whom they are responsible.

The title *Exit Wounds* aptly captures the scale of the issue Cantwell addresses and he explains this in terms of the ballistic effect of a round entering and exiting a body. The psychological dimension has, for too long, been 'patched over' without detailed consideration or rehabilitation. With a major general making such a significant public admission, there is hope that the stigma will now be lifted and those with PTSD will be able to reach out, seek help and manage their condition. The rest of us also are now better placed to help and understand. To General Cantwell I say, 'thank you'.

BOOK REVIEW

Phillip Bradley, *Hell's Battlefield: The Australians in New Guinea in World War II*, Allen & Unwin, Sydney, 2012, 506 pp

Reviewed by John Moremon, Centre for Defence and Security Studies, Massey University

Close to 20 years ago, Peter Stanley, the respected and industrious historian who nowadays heads the Centre for Historical Research at the National Museum of Australia, declared that there was a 'green hole' in Australian military historiography. He noted that the Second World War campaigns in New Guinea, especially post-1942, were some of our most significant yet least studied. He inspired historians and writers to explore the neglected battlefields. Not least of these is Phillip Bradley, this being his fifth book relating to New Guinea.

Unlike his previous books, which examined particular campaigns or battles, mostly in 1943–44, *Hell's Battlefield* provides an overview of land campaigns from 1942 until the war's end. Bradley is to be commended for recognising that, while we have filled in much of the 'green hole', we have left a gap in the market, as it has been years since the arrival of a single-volume account.

For readers seeking stirring tales of Australian (and even some American) battles, *Hell's Battlefield* will not disappoint. Bradley knows how to deliver a good yarn. He is also familiar with much of the ground. He takes us on a journey that starts with the ill-fated defence of New Britain, a tale of survival (for some) and tragedy (for most), including the massacre at Tol, which provides the characteristic title of the opening chapter, 'See you in hell, fellers'. What follows is a string of celebrated characters and stories. Of course we meet Captain Sam Templeton and his 'B' Company, 39th Battalion, on the Kokoda Trail — a chapter kicked off with the legendary Corporal John Metson: 'Shot through the ankle and unable to walk, [he] dragged himself through the jungle in the tracks of his mates.' We also read of courage and sacrifice at Milne Bay, Gona, Wau, Shaggy Ridge, the Torricellis, Buin Road, and seemingly every place in between. Highlighted is the valour of each Victoria Cross recipient, such as Bruce Kingsbury, 'Diver' Derrick and Bert Chowne. And there are other

heroes, such as Billy Cook, who survived Tol, and 'Bull' Allen, the stretcher-bearer whose photograph (carrying an unconscious American soldier across his shoulders on Mount Tambu) graces the cover. The focus here is on good blokes whose exploits secured them a place in the Anzac legend.

The book's jacket notes that Bradley's books are characterised by 'an intimate knowledge gained from his many trips to the battlefields, complemented by his archival research skills and his many unique interviews with New Guinea battlefield veterans'. It adds that Bradley has been described as 'One of the finest chroniclers of the Australian Army's role in the New Guinea campaign.' Indeed, one of Bradley's strengths is his chronicling ability, and many readers will be drawn to the book for this reason. While some stories may be overused and clichéd, the commercial market demands that they are repeated. Fortunately, Bradley has another strength I admire: he refrains from the *Boys' Own Adventure* jingoism employed by other purveyors of the legend. On the other hand, the title *Hell's Battleground* is one of those superlatives that not only boosts book sales but also contributes to the fantasy that Australians encountered the toughest fighting in the world (to borrow a line from the war correspondent George Johnston).

A third strength is that only occasionally does Bradley get things badly wrong. To pull out one example, on pages 170–71 he accuses Brigadier Porter of slighting his own 30th Brigade, when in fact Porter was presenting a frank assessment to Major General Vasey that the brigade lacked the tactical-level leadership and training to have any chance of breaking through at Sanananda. In getting it wrong on this occasion, Bradley reinforces the notion (part of the legend) that there was a serious disconnect between 'diggers' and their commanders. In fact, Porter was saving the lives of some of his men, as his battalions were subsequently extracted for intensive training.

This is not a book for those readers already familiar with the New Guinea campaigns and who simply seek to further their understanding of how the war in the islands was conducted. While a fine storyteller, Bradley is not a trained and skilled historian. His endnotes and bibliography show extensive use of primary documents, but only to gather more well-worn stories of the 'diggers' caught up in *Hell's Battlefield*. He does not pursue important issues such as strategy, command, joint operations, logistics, doctrine and training, technology, environmental and human impacts, or the physical and mental toll on those who survived. For example, we are not told the personal cost of 'Bull' Allen's shows of courage: mental breakdown.

Hell's Battlefield succeeds in bringing tales of New Guinea to a wide audience. We could benefit now from others perhaps working together to produce a single-volume *scholarly* study of these same campaigns.

BOOK REVIEW

David W. Cameron, *The Battle for Lone Pine: Four Days of Hell at the Heart of Gallipoli*, Viking, 2012, 386 pp

Reviewed by Dr Karl James, Australian War Memorial

Built on the heart of the old battlefield, Lone Pine Cemetery on Gallipoli Peninsula is today a place of contemplation and reflection. It contains the remains of over 1100 Commonwealth servicemen including 182 Australians killed in the area, mostly during August 1915, and who are known or believed to be buried in the cemetery. The Lone Pine Memorial, which dominates the cemetery, commemorates the nearly 5000 Australians and New Zealanders who died at ANZAC who have no known grave or who were buried at sea. The peacefulness of the cemetery contrasts starkly with the brutal violence of the area almost 100 years ago.

Staged as part of the doomed British and Commonwealth forces' August Offensive, the Australian attack at Lone Pine was intended as 'a demonstration', a feint to divert the attention of the Turks from the attacks on the Sari Bair ridge from Hill 971 to Chunuk Bair. From 6 to 10 August 1915, units from the Australian 1st Division captured the Turkish trenches at Lone Pine and withstood repeated attacks to hold much of the newly won ground. Charles Bean, the First World War Australian Official Historian, considered the hand-to-hand fighting at Lone Pine 'the heaviest of its kind in which Australian troops ever took part'.

The conditions were truly hellish. In trenches held by the 7th Battalion, for example, 26-year-old Corporal Frederick Wright and 24-year-old Corporal Harry Webb ran along the trench trying to catch and throw back the grenades (the Turkish spherical 'cricket ball' bombs) thrown into their lines by the Turks or smother the grenades' fuse with greatcoats and sandbags. Inevitably, Wright was killed when a bomb he caught exploded. A bomb also exploded in Webb's face. Lieutenant Colonel Harold 'Pompey' Elliot saw the mortally wounded Webb try to make his way out of the line: 'Fancy seeing a man you knew blinded and with both hands blown off trying to get up on his feet … [with his] bleeding shattered stumps

held out in front of him.' Webb died soon afterwards. Both he and Wright are commemorated on the Lone Pine Memorial. Writing to a friend, Elliott described the carnage around him:

> When anyone speaks to you of the glory of war, picture to yourself a narrow line of trenches two and sometimes three deep with bodies and think too of your best friends for that is what these boys become by long association with you mangled and torn beyond description by the bombs and bloated and blackened by decay and crawling maggots.

Over the four days of fighting, the Australian 1st Division suffered over 2200 casualties — virtually half of the total number who had launched the attack — and more than 800 killed. Seven Australians were awarded Victoria Crosses during the action. The Turkish toll was estimated at 6000 casualties including some 1500 killed.

It has been argued that the feint at Lone Pine was *too* successful. The Turkish troops who were sent to reinforce the area were quickly moved to Chunuk Bair to defeat the New Zealand attack once Turkish commanders realised that this was the real objective. Thus the new Australian positions at Lone Pine were exposed to Turkish observation and fire for the rest of the campaign.

Given the vast library that already exists on Gallipoli, it is remarkable that David Cameron's *The Battle for Lone Pine* is the first book to be published dealing solely with Lone Pine. Cameron is well suited to write about the battle, having already written several books on the Gallipoli campaign including *The August Offensive at ANZAC, 1915* (2011) published as part of the Australian Army Campaign Series.

The Battle for Lone Pine is a detailed — and at times moving — narrative. Concentrating on soldiers' experiences, Cameron does not shy away from graphic descriptions of combat and the miserable conditions endured by both Australians and Turks. Indeed, Cameron is to be congratulated for including the Turkish perspective in his narrative. The experiences of many men, such as Wright, Webb and Elliot, fill the book's pages, almost to the point where the number of individuals mentioned becomes a blur. Additional maps, such as those from *The August Offensive at ANZAC, 1915* would have complemented the detailed narrative. So too would a more extensive discussion of the strategy behind the August Offensive, examining Lone Pine in its broader context rather than looking at the battle in isolation.

Overall however, Cameron has researched widely to write an engaging narrative of one of the more desperate and futile actions of the Gallipoli campaign. This book is a tribute to those Australians who are commemorated and forever lie buried at Lone Pine.

BOOK REVIEW

J. Ronald Fox, *Defense Acquisition Reform 1960–2009: An Elusive Goal*, Center of Military History United States Army, Washington, D.C., 2011, 268 pp.[1]

Reviewed by Scott Richardson, Land Warfare Studies Centre

As may be expected, a book entitled *Defence Acquisition Reform 1960–2009: An Elusive Goal* is unlikely to attract a wide audience of avid readers. An account of United States (US) Department of Defense efforts at procurement reform compiled by J. Ronald Fox, a professor of Business Administration and a defence procurement expert who headed two US procurement reviews in the 1970s and 1980s, the subject nonetheless deserves a higher level of readership. Anyone familiar with defence procurement in Australia may find themselves unconsciously nodding their head in agreement within minutes of turning the first page, and may be similarly affected by the author's conclusions. Fox does a capable job in managing a necessarily dense topic, and the book is written in a frank style that does much to keep the reader engaged.

Among other topics, the author follows the involvement of David Packard, the co-founder of Hewlett Packard, in trying to reform US defense procurement. Spanning a period from the late 1960s to the late 1980s, including both the Blue Ribbon Panel and Blue Ribbon Commission, the attempts by Packard to reform the procurement system highlight the author's core themes. The experience of Packard also demonstrates the continuing gulf between identifying the core issues and actually effecting meaningful change.

Fox also seeks to capture the broad range of factors that makes defence procurement so difficult, and reform so strongly resisted. These include political interference, as demonstrated by reform initiatives during the Reagan era, and the importance of individual personalities such as William J. Perry, who drove reform during the Clinton presidency and waged a campaign against unnecessary Military Specifications requirements. These examples, along with many others, will be of interest to ADF officers posted to procurement positions, Defence public service

employees and managers working (or looking to work) in procurement — or, more broadly, anyone who seeks a better understanding of defence procurement's inherent complexities.

Fox's story is one that many in the Australian Defence community should recognise, and it is that point which demonstrates its potential value. Although US procurement is much larger and more complex than Australian, there are parallels. Fox brings into clear focus the spectrum of repetitive issues that continues to complicate defence procurement, including Australia's. The US experience of reform also serves to illuminate the various methods that have been tried, sometimes repeatedly and, more importantly, the reasons they continue to fail.

Direct parallels can and should be drawn from the experiences outlined by Fox. In providing his lessons in an easily accessible form, he offers us an opportunity to learn from the US experience and to frame our own reforms. As a learning tool, *Defense Acquisition Reform* offers a different and perhaps more useful perspective than that of other defence reviews. It should be read, and its advice heeded, by all those working in procurement.

ENDNOTE

1   available at: http://www.history.army.mil/html/books/051/51-3-1/CMH_Pub_51-3-1.pdf

BOOK REVIEW

Mark Johnston, *Anzacs in the Middle East: Australian soldiers, their allies and the local people in World War II*, Cambridge University Press, Melbourne, 2013, 255 pp

Reviewed by Tristan Moss, PhD student, Australian National University

During the first half of the Second World War, three Australian divisions and thousands of support troops played an important role in the war against Italy and Germany. Over a period of three years, Australian soldiers campaigned or were stationed in Egypt, Libya, Palestine, Lebanon, Greece and Crete. During this time, Australians invariably came into contact not only with the diverse nationalities of Commonwealth troops brought together to defend the empire, but also the culturally diverse and often alien local populations of the Middle East. It is these relationships, between Australians, their allies and the locals, into which Mark Johnston's latest book delves.

The book's eight chapters are anchored around the sites of Australian battles, training camps and places of leave, as well as transport to the theatre. The Australians' relationship with other soldiers, particularly the British, is discussed throughout the book as contact was constant, while interactions with the locals are explored for the most part in the context of leave or training, focusing on one group at a time.

Since Australians served as part of a multinational force, usually under British control, *Anzacs in the Middle East* covers the sometimes turbulent relationship between troops from across the broad spectrum of the empire. Johnston's detailed exploration of the British opinion of Australian soldiers follows the traditional trajectory of such discussions, but the book goes further than most other studies in its examination of the interactions between Australian and all other Commonwealth soldiers, as well as the Greeks and Cretans involved in the fighting. Johnston's approach is to provide the reader with a general, balanced and colourful impression of these relationships, carefully building a portrait from accounts of all ranks and all national perspectives. Particularly interesting

is Johnston's examination of the influence of memories of the First World War, not only on perceptions of Australian soldiers by others, but also Australians' own ideas of how they should act.

It is in its exploration of Australians' relationship with the local population of the Middle East that Johnston's book shines. Not only does he cover the traditional fare of larrikin diggers playing havoc in Cairo, he also delves into varied topics such as business relationships with Jews in Palestine, the attitudes of Greeks towards their retreating allies and Australian experiences on shore leave in Ceylon in 1940 on the way to Egypt.

Local people, particularly those of different cultures and ethnicities, have tended to be confined to broad stereotypes and pushed to the background in most Australian histories of the war. It is in bringing these people and their varied and extensive interactions with Australians to the fore that Johnston makes the strongest contribution to our understanding of this theatre. At the same time, Johnston pulls no punches in acknowledging that Australians were very much the products of their time and could hold views that were racist or offensive to modern sensibilities. But, he points out, so too could they have meaningful and strong relationships with the people of the Middle East that reached across the traditional distance of culture and race.

In *Anzacs in the Middle East*, Johnston draws on letters, diaries, and firsthand accounts. He is clearly at home with this material, his other books having been based on similar sources, and uses them to great effect to paint an engaging picture of Australian relationships. However, at times the structure is a little repetitious, with Johnston striving to portray a balanced relationship, describing first the negative aspects of a relationship, then the positive. Moreover, despite the reference to 'Anzacs' in the title, New Zealanders get short shrift; this perhaps speaks to the ongoing Australian appropriation of the term 'Anzac'.

Overall, *Anzacs in the Middle East* is a rich history of Australians and their encounters with the myriad nationalities thrown together by the Second World War in the Mediterranean and the Middle East. Johnston adds colour and nuance to our understanding of the theatre, reminding us not only of the Australians' varied encounters, but also of the fact that these encounters were an integral and important part of the wartime experience.

TITLES TO NOTE

Listed below is a select group of books recently or soon to be published that either contribute to the discussions initiated in the articles in the *Australian Army Journal* or on subjects that may be of interest in the near future. Some of these books may be reviewed in forthcoming editions of the *Journal*.

- John R. Ballard, David W. Lamm and John K. Wood, ***From Kabul to Baghdad and Back: the US at War in Afghanistan and Iraq***, Naval Institute Press, Annapolis, 2012, 408 pp.

   Ballard et al. examine the US campaigns in Iraq and Afghanistan focusing on those operational and strategic decisions that were most significant in shaping the course of both wars, from the liberation of Kabul in November 2001 to the surge strategies eventually employed in both conflicts. The book critically analyses the problems that beset the two wars, and argues that the US decision to prosecute both simultaneously affected the success of each individually. The authors reflect on lessons to be learnt from this most recent experience of a nation fighting two wars at once.

- Abdel Bari Atwan, ***After Bin Laden: Al-Qa'ida, The Next Generation***, Saqi Books, 2012, 300 pp.

   Al-Qa'ida: The Next Generation looks at the continuing and evolving threat posed by Al-Qa'ida and its associated movements following the assassination of Osama bin Laden. Atwan argues that reports of the organisation's demise are premature. Not only has it survived, the author argues, but having become a more horizontal and decentralised entity, it is now a stronger and more elusive target. The book describes the broadening network of alliances that Al-Qa'ida has forged, analyses its increasingly sophisticated grasp on technology and demonstrates how the group has exploited recent turmoil in the Middle East (notably in the wake of the Arab Spring) to its advantage.

- James C. McNaughton, *The Army in the Pacific: A Century of Engagement*, Center of Military History, United States Army, Washington DC, 2012, 91 pp.

  The 20th century was an extraordinarily turbulent period for the Pacific. As the US strategic focus shifts from the Middle East back to the region, McNaughton's book presents a timely account of the US Army's involvement in major Pacific conflicts from the war with Spain in 1898 to the Vietnam War. It illustrates how the US Army was required to engage in a variety of different missions, arguing that in doing so the forces helped to stabilise a complex region, and one to which US strategic interests were and continue to be inextricably linked.

- Geoff Hiscock, *Earth Wars: The Battle for Global Resources*, John Wiley & Sons Singapore, 2012, 286 pp.

  Hiscock's central thesis is that, in the digital age, the great powers and their rivals will compete for 'four essentials': food, water, energy and metals. *Earth Wars* is a snapshot of this competition as it currently stands. The book examines political, technological and business developments across a range of key resource areas, including nuclear power, green energy, copper and shale gas. It also looks at the key players involved in the production of these resources, and the disputes and tensions that have arisen over them.

- Scott D. Aiken, *The Swamp Fox: Lessons in Leadership from the Partisan Campaigns of Francis Marion*, Naval Institute Press, Annapolis, 2012, 336 pp.

  The Swamp Fox is an historical account of the method of guerrilla warfare employed by Brigadier General Francis Marion against the British during the American Revolution. It examines his tactics and leadership style, and also describes how Marion engaged in manoeuvre warfare, positional warfare and information warfare. The author relates Marion's encounters to modern warfighting and shows how tactics employed over two centuries ago remain relevant today.

- John Andreas Olsen and Colin S. Gray (eds), *The Practice of Strategy: From Alexander the Great to the Present*, Oxford University Press, Oxford, 2011, 324 pp.

  This work is a study of the nature and logic of grand strategy and military strategy. It consists of 12 separate case studies, each by different authors. The editors seek to discover whether there are certain universal themes to be found in the practise of strategy despite the numerous differences in the circumstances of each case. They argue that, notwithstanding such differences, 'nothing essential changes in the nature and function (or purpose) of strategy and war'.

- Robert Stevenson, *To Win the Battle: The 1st Australian Division in the Great War, 1914–1918*, Cambridge University Press, UK, 2013, 290 pp.

  To Win the Battle seeks to identify the source of the 1st Australian Division's reputation as a formidable and reliable fighting force during the First World War. Stevenson uses extensive primary source material to look behind the myth surrounding the formation, much of which ascribes the Division's success to its soldiers' natural prowess. Stevenson demonstrates that the Division was not born great but became so, primarily because of effective administration, training, and the capacity of its commanders to adapt to the changing circumstances of the battlefield. This title is part of the Australian Army History Series.

- David Barrett and Brian Robertson, *Digger's Story*, The Five Mile Press, 2012, 290 pp.

  Robertson and Barrett live in the same retirement village in Queensland. Over the course of several Sunday afternoons, Robertson recorded interviews with Barrett concerning his experiences as a Japanese prisoner of war during the Second World War. *Digger's Story* puts that account to paper. The book highlights Barrett's time working on the Burma-Thai Railway and the tasks he was required to undertake as a medical orderly. It also examines the Australian Reparations Committee, in which Barrett was involved, as well as the issue of post-war race relations with Japan.

- Christopher Moore, *Roger, Sausage & Whippet – A Miscellany of Trench Lingo from the Great War*, Headline, London, 2012, 224 pp.

  A unique lexicon was born in the trenches of the First World War. Moore's book catalogues the words and phrases that entered the vernacular of the British soldier through the course of that conflict. Interspersed throughout this dictionary are the letters of Moore's own 'Captain Cartwright', a humorous yet practical application of a language both peculiar and complex.

- Roland Perry, *Pacific 360° – Australia's Battle for Survival in World War II*, Hachette Australia, Sydney, 2012, 500 pp.

  Pacific 360° recounts the experience of Australia as a nation during the Pacific conflict of World War II. Australia was being pulled in different directions by Churchill and Roosevelt, all the while facing the threat of the Imperial Japanese Army which, by February 1942, had taken Singapore — 'Australia's Dunkirk'. Perry's analysis is conducted from multiple viewpoints, in particular that of wartime Prime Minister John Curtin. The work adopts a narrative style and treats its subject matter in detail.

- Carolyn W. Pumphrey (ed), *The Energy and Security Nexus: A Strategic Dilemma*, Strategic Studies Institute, Carlisle, 2012, 306 pp, also available at: https://www.strategicstudiesinstitute.army.mil/

Over the course of two days in March 2011, the Triangle Institute for Security Studies, the North Carolina State University and the Strategic Studies Institute held a colloquium in Raleigh, North Carolina. Entitled 'the energy and security nexus: a strategic dilemma', the colloquium was attended by representatives of US federal and state government agencies, universities, think tanks, local organisations and businesses. Participants examined the connections between energy and security and discussed various ideas on how to resolve the strategic challenges they had identified. These discussions have been published in this volume edited by Carolyn Pumphrey.

NOTES FOR CONTRIBUTORS

The editors of the *Australian Army Journal* welcome submissions from any source. Two prime criteria for publication are an article's standard of written English expression and its relevance to the Australian profession of arms. The journal will accept letters, feature articles, review essays, emails and contributions to the *Point Blank* and *Insights* sections. As a general guide on length, letters should not exceed 500 words; articles and review essays should be between 3000 and 6000 words and contributions to the *Insights* section should be no more than 1500 words. The *Insights* section provides authors with the opportunity to write brief, specific essays relating to their own experiences of service. Readers should note that articles written in service essay format are discouraged, since they are not generally suitable for publication.

Each manuscript should be submitted through the *Australian Army Journal* email inbox, army.journal@defence.gov.au. For more information see <http://www.army. gov.au/Our-future/Directorate-of-Army-Research-and-Analysis/Our-publications/ Australian-Army-Journal/Information-for-authors>.

PLEASE MAKE SURE YOUR SUBMISSION INCLUDES THE FOLLOWING DETAILS:

- Author's full name
- Current posting, position or institutional affiliation
- Full mailing address
- Contact details including phone number(s) and email address(es)

PLEASE ALSO INCLUDE THE FOLLOWING FIELDS IN YOUR SUBMISSION:

- 100-word article abstract
- 100-word author biography (please see the following biography guidelines)
- Acronym/abbreviations list

THE ARTICLE MUST BE PRESENTED IN THE FOLLOWING FORMAT/STYLE:

- Microsoft Word (.doc) or Rich Text Format (.rtf)
- 1.5 line spacing
- 12-point Times New Roman
- 2.5 cm margin on all sides
- Automatic word processed footnotes

- No 'opcit' footnote referencing
- Australian spelling (e.g., –ise not –ize)

GENERAL STYLE

All sources cited as evidence should be fully and accurately referenced in endnotes (not footnotes). Books cited should contain the author's name, the title, the publisher, the place of publication, the year and the page reference. This issue of the journal contains examples of the appropriate style for referencing.

When using quotations, the punctuation, capitalisation and spelling of the source document should be followed. Single quotation marks should be used, with double quotation marks only for quotations within quotations. Quotations of thirty words or more should be indented as a separate block of text without quotation marks. Quotations should be cited in support of an argument, not as authoritative statements.

Numbers should be spelt out up to ninety-nine, except in the case of percentages, where arabic numerals should be used (and *per cent* should always be spelt out). All manuscripts should be paginated, and the use of abbreviations, acronyms and jargon kept to a minimum.

BIOGRAPHIES

Authors submitting articles for inclusion in the journal should also attach a current biography. This should be a brief, concise paragraph, whose length should not exceed eight lines. The biography is to include the contributor's full name and title, a brief summary of current or previous service history (if applicable) and details of educational qualifications. Contributors outside the services should identify the institution they represent. Any other information considered relevant—for example, source documentation for those articles reprinted from another publication—should also be included.

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