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**THE HUMAN DIMENSION OF THE
HARDENED AND NETWORKED ARMY:
THE LESSONS OF FRIENDLY FIRE**

by

Lieutenant Colonel Robert C Stevenson

June 2006

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Lieutenant Colonel Stevenson is a graduate of the Australian Army Command and Staff College, he holds a Master of Defence Studies (UNSW) and is currently finalising a Doctorate of Philosophy (UNSW). This paper is the second in a series of three that explores the phenomenon of military fratricide from a contemporary Australian perspective. The first paper was published by the Land Warfare Studies Centre in March 2006 and the third will follow in the coming months.

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ABSTRACT

Fratricide is an ever-present problem, and its effects are devastating and widespread. Like a tsunami, fratricide's influence spreads from the epicentre to engulf the victim's family and friends, the military, the broader public and the Government. At each level, the damage takes on a different form, but as the effect widens it leaves a trail of grief, trauma and eroded confidence.

The second in a series of three, this study draws on the Australian Army's experience of fratricide during the Vietnam War (1959–1975). The infliction of casualties by the military's own forces, 'friendly fire', was a frequent and inevitable occurrence during this and other wars. As explored previously in 'Not-so Friendly Fire: An Australian Taxonomy of Fratricide' (LWSC Working Paper 128, March 2006), Australian forces in Vietnam did not face one type of fratricide but rather three distinct varieties: accidental, military-industrial, and calculated. The second paper suggests that, far from being an aberration in war, these types of incidents are an ever-present danger when humans are placed in positions of fear, fatigue and uncertainty.

This paper analyses the human dimension of the Hardened and Networked Army (HNA) through the prism of fratricide. It adopts this method because fratricide is multifaceted, inevitable and one of the most significant problems any army has to endure. It cannot be dealt with via simple solutions or 'silver bullet' options. In this respect fratricide is an ideal vehicle through which to examine some aspects of the human dimension of HNA and the challenges of complex warfighting. The paper attempts to address some of the underlying causes of fratricide and explores the complex decision-making behind each cause. The conclusion is that the real challenge for today's Army is to embrace the realities of human performance when incorporating emerging technology.

ABBREVIATIONS AND ACRONYMS

1ATF	1st Australian Task Force, Vietnam
AWM	Australian War Memorial
CAS	Close Air Support
CID	Combat Identification
IFF	Identification Friend or Foe
FSB	Fire Support Base
HNA	Hardened and Networked Army
HQ	Headquarters
NCO	Non-commissioned Officer
NVA	North Vietnamese Army
RAAF	Royal Australian Air Force
SPR	Sapper
UD	Unauthorised Discharge
US	United States
USAF	United States Army Force
VC	Viet Cong

The Human Dimension of the Hardened and Networked Army: the Lessons of Friendly Fire

Lieutenant Colonel Robert C. Stevenson

This difficulty of accurate recognition constitutes one of the most serious sources of friction in war, by making things appear entirely different from what one had expected. The senses make a more vivid impression on the mind than systematic thought — so much so that I doubt if a commander ever launched an operation of any magnitude without being forced to repress new misgivings from the start ... War has a way of masking the stage with scenery crudely daubed with fearsome apparitions. Once this is cleared away, and the horizon becomes unobstructed, developments will confirm his earlier convictions — this is one of the great chasms between planning and execution.

Carl von Clausewitz¹

A long history

The Australian Army has been no stranger to the phenomenon of fratricide throughout its 100-year history. Although accidentally killing or wounding mates is rarely acknowledged in the ‘digger tradition’, Australian soldiers have been just as prone to fratricide as members of other armies. At Gallipoli, an Australian sentry shot his commanding officer when the officer failed to respond to the sentry’s challenge.² Other soldiers were shot accidentally during night patrols as they probed no-man’s land.³ On the Western Front,

¹ Carl von Clausewitz, *On War*, ed and trans by Michael Howard and Peter Paret, Princeton University Press, Princeton, 1976, pp. 117–118.

² Charles Edwin Woodrow Bean, *The History of Australia in the War of 1914–1918, Volume I: The Story of Anzac*, Angus and Robertson, Sydney, 11th edn, 1941, p. 599 footnote 32.

³ For one example see Darryl Kelly, *Just Soldiers: Stories of Ordinary Australians Doing Extraordinary Things in Time of War*, ANZAC

‘short-shooting’ artillery plagued Australian infantry, leading one frustrated battalion commander to plead with his superior headquarters (HQ):

Can this matter have attention please? At present I am endeavouring by all means possible to stop our artillery from firing, and it is now 45 minutes since I sent my first message and one gun is still firing with disastrous effect.⁴

During the Second World War, Australian troops faced similar problems coordinating indirect-fire support, while the use of close air support added a new dimension to the problem. The nephew of General Sir Thomas Blamey, Captain Jack Blamey, and one of his soldiers were killed in New Guinea by a mortar bomb fired by a supporting US unit. Nor was this an isolated event. The next day another American mortar bomb fell on an Australian platoon in the forward area, killing five men and wounding eight others.⁵ American mortarmen were not the only culprits. In the assaults against the Japanese bastion of Gona, Captain John O’Neill’s company fought its way into the village only to find themselves, ‘through some error of the gunners, under fire from the Australian artillery’.⁶ O’Neill was just one of three officers and 56 men killed that day, and many of these were victims of their own fire. Such examples are illustrative of an enduring problem that has continued to plague the Australian Army.

Day Commemoration Committee (Queensland) Incorporated, Aspley, QLD, 2004, pp. 89–93.

⁴ Commanding Officer 3rd Battalion (AIF) quoted in Bean, *The History of Australia in the War of 1914–1918, Volume III: The Australian Imperial Force in France: 1916*, Angus and Robertson, Sydney, 12th edn, 1941, p. 778. This was just one of a number of incidents that occurred during the fighting around Mouquet Farm in August 1916.

⁵ Dudley McCarthy, *Australia in the War of 1939–1945, Series 1 (Army), Volume V: South-West Pacific Area — First Year, Kokoda to Wau*, Australian War Memorial, Canberra, 1959, p. 398.

⁶ McCarthy, *South-West Pacific Area — First Year*, p. 432.

During the Korean War (1950–1953), United Nations' troops were regularly subject to the unwanted attention of misdirected allied air strikes. During the desperate fighting around Kapyong in April 1951, a spotter-aircraft directing an air strike in support of the Australian troops accidentally fired a marker flare into an Australian position and the troops were napalmed by supporting US Marine Corps fighters.⁷ During the Malayan Emergency (1948–1960), as many Australian troops died from being shot accidentally as were killed in action by the enemy.⁸ In Vietnam, the 1st Australian Task Force (1ATF) found the problem of friendly fire so widespread that it has been described as 'an endemic part of the 1ATF's approach to Counter Revolutionary ... warfare'.⁹

Australia's commitment to the Vietnam War lasted more than a decade. It was a conflict fought between a coalition of 'Free World Forces' against a domestic insurgency supported by foreign-based irregular and conventional forces. Australian operations in Vietnam were often joint and they covered the full spectrum of conflict, from mid-intensity conventional operations through to low-intensity counterinsurgency. The battlefields of South-East Asia were often characterised by low troop-to-space ratios where enemy forces sought to minimise their opponent's superior firepower by hiding among non-combatants. In this complex environment, the enemy displayed a preference for close quarter battle rather than stand-off engagements, not only because it gave them a better chance of surviving, but also

⁷ Robert O'Neill, *Australia in the Korean War, Volume II: Combat Operations*, Australian War Memorial, Canberra, 1985, p. 153.

⁸ Peter Dennis and Jeffrey Grey, *Emergency and Confrontation: Australian Military Operations in Malaysia and Borneo 1950–1966*, Allen and Unwin, St Leonards, NSW, 1996, Appendix E, pp. 337–8; and Australian War Memorial (AWM): Roll of Honour Database.

⁹ Robert Hall and Andrew Ross, 'Lessons From Vietnam — Friendly Fire in Low Level Warfare', in Vinod Puri, Despina Filippidis and Brigadier Steve Quinn (eds), *Land Warfare Conference 2002 Proceedings*, Defence Science and Technology Organisation, Edinburgh, SA, October 2002, p. 107.

because of the perceived reluctance of Western forces to accept casualties. It was an era when the media was beginning to play an increasingly intrusive role in the battlespace—not always as a simple observer and reporter—in an environment where friendly casualties were politically sensitive. These factors alone suggest that at least some of the Vietnam experience may serve as a useful predictor for the Hardened and Networked Army (HNA)¹⁰ as it explores how it will deal with the future warfighting environment.

While some military professionals have long recognised the problem of friendly fire, a number of constraints have limited systematic analysis. Among these are the sensitivities surrounding any admission that the military might accidentally kill its own. This in turn kept the matter buried in personal memoirs and led to little understanding of its extent or nature. Hence, during the coalition operations to liberate Kuwait in 1991, when the problem was first exposed under the glare of the international media, the public, defence commentators and even many in the military were shocked by how common these incidents could be. During Operation *Desert Storm*, a significant proportion of the American and British service personnel killed in combat were victims of what was euphemistically labelled as ‘friendly fire’ in ‘blue on blue’ incidents. More recently, during the US-led military interventions into Afghanistan and Iraq, the American military and public were again rocked by the deaths of a number of Coalition troops who were mistakenly attacked by friendly air forces or ground troops. The scale and number of such incidents continues to surprise the public in the era of so-called ‘smart weapons’ and ‘bloodless victories’; however, incidents of this

¹⁰ The intent of the HNA program is to transition the Australian Army from a light infantry force to a light armoured force that is a better protected, more mobile, networked, and harder hitting force and thus capable of undertaking the types of missions that are likely in the 21st century. See Lieutenant General Peter Leahy, ‘A Land Force in the Early 21st Century’, *Australian Army Journal*, vol. 1, no. 1, June 2003, pp. 19–28.

type have been a common problem since Homer chronicled the experience of early Greek warfare.¹¹

The Australian Army recognises that the security environment in the early 21st century has undergone profound changes. The forces of globalisation and information technologies that have some commentators heralding a new Revolution in Military Affairs are shaping the environment in which Australian soldiers will fight in the new millennium.¹² The Army's recent keystone doctrine on complex warfighting recognises the challenges that this environment will provide.¹³ Furthermore, the Chief of Army's initiative to transition to the HNA will, when realised, provide the Army with much of the technology required to meet these challenges. HNA is, however, about much more than technology. Perhaps the most

¹¹ For a comparison of the experience of fratricide by Homer's Greek warriors and America's Vietnam veterans see Jonathan Shay, *Achilles in Vietnam: Combat Trauma and the Undoing of Character*, Scribner, New York, 1994, pp. 124–5. For the problem of battlefield identification and fratricide in the ancient Greek warfare see Victor Davis Hanson, *The Western Way of War: Infantry Battle in Classical Greece*, Hodder & Stoughton, London, 1989, pp. 186–7.

¹² 'A military revolution typically occurs when the application of new technologies into a significant number of military systems combines with innovative operational concepts and organisational adaptation in a way that dramatically increases military effectiveness and fundamentally alters the character and conduct of military competitions': Andrew Krepinevich, 'Introduction', *Australian Defence Force Journal*, no. 144, September/October 2000, p. 3. For a useful overview of the Revolution in Military Affairs, see the collection of papers titled 'Perspectives on the Revolution in Military Affairs' in *Parameters*, vol. XXV, no. 2, Summer 1995, pp 7–54; and Macgregor Knox and Williamson Murray (eds), *The Dynamics of Military Revolution 1300–2050*, Cambridge University Press, Cambridge, 2002.

¹³ Australian Army, *Complex Warfighting*, Army Headquarters, endorsed by the Chief of Army's Senior Advisory Committee on 7 May 2004, <http://www.defence.gov.au/army/lwsc/Publications/complex_warfighting.pdf>.

important elements of the plan require changes to doctrine, training and (some suggest) to the very culture of the Army. On the other hand, care has to be exercised in implementing change. Seemingly simple changes in complex organisations can have profound and unforeseen second- and third-order effects, especially if the impact on the soldier is not taken into account.

This paper analyses the human dimension of HNA through the prism of fratricide. It adopts this method because ‘friendly fire’ is one of the enduring and inevitable challenges of land force operations, and one that the Army cannot afford to ignore. It is not a one-dimensional problem that can be solved simply with the liberal application of new technology. Fratricide demands an understanding of the human dimension of warfare, and any attempt to tackle this problem demands a broad-ranging strategy that can (at best) only aim to minimise and mitigate—rather than eradicate—the problem. In this respect, fratricide is an ideal vehicle through which to examine some aspects of the human dimension of HNA and the challenges of complex warfighting. The paper draws on the Australian Army’s earlier experience of fratricide during the Vietnam War and employs this evidence to substantiate its propositions. It attempts to address some of the underlying causes of fratricide and explores the complex decision-making behind each cause. Finally, the paper concludes by suggesting some of the implications this might have for the HNA. To begin, it is necessary to classify the problem.

Classifying fratricide

Although there is no universal definition of fratricide, analysis of the Australian Army’s experience reveals three clear aspects of the phenomenon.¹⁴ First, there is not a single category of fratricide; cause, intent and effect link several different types of friendly fire

¹⁴ For a fuller explanation of this taxonomy see Lieutenant Colonel Robert C. Stevenson, ‘Not-so Friendly Fire: An Australian Taxonomy of Fratricide’, LWSC Working Paper 128, Duntroon, ACT, March 2006.

incidents. Second, despite attempts to address the causes of fratricide, it remains a constant feature of the Australian military experience. This suggests that to understand the problem it is necessary to take a broader and more complete view of the problem. Third, the social effects of fratricide are far-reaching and the HNA will ignore these effects at its peril.

For thematic clarity, this paper takes a broad interpretation of the phenomenon of fratricide. The US definition of fratricide is the generally accepted one, which is ‘the employment of friendly weapons and munitions with the intent to kill the enemy or destroy his equipment or facilities that results in unforeseen and unintentional death or injury to friendly personnel’.¹⁵ However, this definition is too restrictive. It constrains the ability of policy makers and military professionals to address the problem. Instead of accepting only a single ‘type’, as the current US definition does, the Australian experience suggests there are at least three broad and enduring categories of unintentional fratricide: ‘accidental’, ‘military-industrial’ and ‘calculated’.

‘Accidental fratricide’ involves employing weapons and munitions with the intent to kill the enemy or destroy their equipment or facilities, but instead results in the unforeseen and unintentional death or injury to friendly personnel. This category is ‘classic’ fratricide and includes those incidents covered under the current US definition, where friendly forces engage other friendly forces mistaking them for the enemy. It includes incidents of air-to-air, air-to-surface, surface-to-air and surface-to-surface fires, involving sea, ground and air forces, and it can involve indirect-fire weapons, direct-fire weapons, or combinations of both.

¹⁵ General Officer Steering Committee, 17 December 1991. Quoted in Colonel Dwight B. Dickson and Captain Elrin L. Hundley, ‘Avoiding Not-so Friendly Fire’, *Military Review*, vol. LXXII, no. 7, July 1992, p. 57.

‘Military-industrial fratricide’¹⁶ involves employing weapons and munitions, not in the presence of the enemy, but where the actions of friendly personnel result in the unforeseen and unintentional death or injury to their own side. These incidents are accidental because they occur through the mishandling of friendly or enemy weapons or munitions, where there is no enemy threat or at least no perceived enemy threat. This category includes unauthorised discharges, mishandling of weapons and munitions, and live-fire training accidents.

The third category is ‘calculated fratricide’, which involves employing weapons and munitions with the intent to kill the enemy or destroy their equipment or facilities but in a manner that consciously endangers friendly personnel and results in the foreseen but unintentional death or injury to friendly personnel. This category includes situations where friendly forces deliberately draw fire onto themselves or dangerously close to their position.

This taxonomy is one way of categorising these types of events and only addresses unintentional acts of friendly fire. It could, however, be expanded to include more deliberate acts like the murder of unpopular officers (commonly termed ‘fragging’), mercy killings of mortally wounded comrades, or other events where friendly forces are deliberately targeted. As these incidents are motivated by different emotions, and are deliberate rather than inadvertent, they are excluded from the taxonomy offered in this paper.

Despite its limitations, the taxonomy proposed in this paper has three significant advantages over the currently accepted definition. It treats fratricide as a multidimensional problem that requires multifaceted

¹⁶ I have borrowed this term from Robert Hall’s work in which he used the term ‘industrial accidents’ to describe some categories of firearms accident in his study of the 8th Battalion, the Royal Australian Regiment (8RAR) during its tour of Vietnam. Robert A. Hall, *Combat Battalion: The Eight Battalion in Vietnam*, Allen and Unwin, St Leonards, NSW, 2000, pp. 175–6.

solutions. This will enable leaders to better grasp the problem and develop solutions to an undesirable, yet inevitable, feature of complex land operations. Acknowledging—rather than accepting—this fact will allow the HNA’s leaders to better deal with the problem.

The enduring environment: fatigue, fear and friction

Dealing effectively with fratricide requires leaders to understand ‘how’ and ‘why’ these events occur. It is essential to move beyond simplistic statements of cause and effect. To understand why fratricide occurs we have to begin by understanding decision-making errors. Fortunately, there is a substantial body of literature exploring these all-too-human events. In *Normal Accidents*, sociologist Charles Perrow lists the following conventional explanations for accidents:

- operator error;
- faulty design or equipment;
- lack of attention to safety procedures;
- lack of operating experience;
- inadequately trained personnel;
- failure to use the most advanced technology; or
- systems that are too big, underfinanced, or poorly run.¹⁷

In their book *Military Misfortunes*, Eliot Cohen and John Gooch identify similar factors, including errors of judgement, individual incompetence, collective incompetence, and institutional or cultural failure.¹⁸ Indeed, these factors are routinely invoked to explain friendly fire incidents.¹⁹

No doubt these factors provide some explanation for these events, but, while alluring, such explanations can actually disguise the

¹⁷ Charles Perrow, *Normal Accidents*, Princeton University Press, Princeton, 1999, p. 63.

¹⁸ Elliott A. Cohen and John Gouch, *Military Misfortunes: The Anatomy of Failure in War*, The Free Press, New York, 1990, pp. 6–16.

¹⁹ For example Scott A Snook, *Friendly Fire: The Accidental Shootdown of US Black Hawks Over Northern Iraq*, Princeton University Press, Princeton, 2000, pp. 66–7.

complexity of the issues, making it more difficult to find suitable solutions. There is danger in seeing fratricide as an aberration, the result of some human, equipment, or procedural failing. This approach ignores the intrinsic and enduring nature of warfare and the central place of the soldier. It is also necessary to understand the different factors that influence each fratricide category.

Putting aside calculated fratricide for the moment, accidental fratricide most often occurs in high-tempo combined arms or joint-coalition operations and most often involves the engaging weapons platform mis-identifying the target. In fluid military situations, the decision to engage a friendly is often rooted in a lack of situational awareness of own, allied or enemy forces, a lack of appreciation by the firer of their own position, or an inability to communicate a change of plan.²⁰ But if these causes account for most accidental fratricide cases, they do not explain military-industrial fratricide.

Military-industrial fratricide occurs through the mishandling of the soldier's tools of trade. These events have a number of causes:

- a lack of training or familiarity with weapons or munitions;
- faulty equipment or munitions;
- misadventure; or
- mishandling.

Blame is often laid at the feet of the individual who pulled the trigger or the leader who failed to exercise sufficient supervision to prevent the incident. Rarely, however, are these events mono-causal. To appreciate why such incidents are so persistent, we have to look inside the soldier to try and understand why they saw the event in the way they did. We also must ask why they acted in a manner that turned out to be inappropriate. To do this we not only have to differentiate

²⁰ Unpublished United Kingdom Ministry of Defence Report, March 1993, cited in Peter H.G. Penny, 'Combat Identification: Aspirations and Reality', *Military Technology*, vol. 26, issue 5, May 2002, p. 50.

between those factors unique to each category of fratricide, but we also have to understand those factors that are common to all. Here it is worth exploring the environmental factors that are most often a significant influence on human performance under stress.

The three aspects of combat common to conflict in any age are ‘fear’, ‘fatigue’ and ‘friction’. For Australian soldiers—from Flanders to Afghanistan—these three factors have remained the determining and enduring characteristics of warfighting.²¹ In the Vietnam War, the soldier’s experience of combat differed little from his experiences of his grandfather and father in the First World War and the Second World War respectively. The life of a combat soldier on operations was ‘one of hard physical work, of being hungry, tired, filthy, soaked with either sweat or rain and often fearful’.²² An early Second World War study concluded that fatigue and fear share a symbiotic relationship: ‘The presence of hunger, thirst, fatigue, ignorance of plan, [and] idleness increases the danger from fear’.²³ The authors of the study observed that:

Fear is a drive which incites to action. The action which follows on fear may be profitable or useless from the military standpoint.²⁴

²¹ On the subject of fear in combat see Lieutenant Colonel Dave Grossman, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, Back Bay Books, Boston, 1996, pp. 51–66; Richard Holmes, *Firing Line*, Jonathan Cape, London, 1985, pp. 204–69; Samuel Hynes, *The Soldiers’ Tale: Bearing Witness to Modern War*, Pimlico, London, 1998, pp. 60–5 and 90–2; and Keegan, *The Face of Battle*, pp. 71–4. On the subject of fatigue, see Anthony Kellett, *Combat Motivation: The Behavior of Soldiers in Battle*, Kluwer-Nijhoff Publishing, Boston, 1982, pp. 231–40; and Holmes, *Firing Line*, pp. 115–25. For the enduring problem of friction see Barry D. Watts, *Clausewitzian Friction and Future War*, McNair Paper 68, Revised edn, National Defense University, Washington DC, 2004.

²² Hall, *Combat Battalion*, p. 82.

²³ John Dollard and Donald Horton, *Fear in Battle*, Greenwood Press, Westport, CT, 1977, p. 2.

²⁴ Dollard and Horton, *Fear in Battle*, p. 6.

Whether fear-induced action is effective or not, the consequence of fear is a constant. According to one soldier-scholar, fear is the ‘the most significant common denominator for all soldiers’.²⁵ Carl von Clausewitz first proposed the concept of ‘friction’. Friction occurs when ‘[c]ountless minor incidents — the kind you can never really foresee — combine to lower the general level of performance, so that one always falls far short of the intended goal’.²⁶ Its general effect on the commander and soldier he described in the well-known phrase: ‘Everything in war is very simple, but the simplest thing is difficult’.²⁷ Whatever the future might hold, friction is likely to remain a part of the soldier’s experience of war, just as it has for the past 10 000 years.

In the peacekeeping operations that have dominated Australia’s post-Vietnam deployments, soldiers have had to endure similar conditions, even if the intensity of combat was different or, in many cases, completely absent.²⁸ It is only when military and community leaders see a soldier’s experience in this light that it is possible to understand the underlying cause of fratricide. Fear, fatigue and friction are an environmental baseline from which all other inquiry must begin. Only from this baseline is it possible to make sense of fratricide’s persistence despite the procedural, training and administrative measures taken to prevent it.

Military leaders understand how exposure to continuous operations degrades combat skills.²⁹ Indeed, military training targets this

²⁵ Elmar Dinter, *Hero or Coward: Pressures Facing the Soldier in Battle*, Frank Cass, London, 1985, p. 12.

²⁶ Clausewitz, *On War*, p. 119.

²⁷ *ibid.*

²⁸ Breen, *A Little Bit of Hope*, pp. 126–7.

²⁹ For a review of current literature on stress and combat training see Jeremy Manton, Carlene Wilson, and Helen Braithwaite, ‘Human Factors in Field Training for Battle: Realistically Reproducing Chaos’, in Michael Evans and Alan Ryan (eds), *The Human Face of War: Killing, Fear and Chaos in Battle*, Allen and Unwin, St

problem—seeking to reduce the effect—and yet rarely is the link between fear, fatigue, friction and fratricide drawn clearly. Fear accentuates fatigue, and, in combination, constantly undermines the best efforts of an army to control fratricide. It is the dichotomy of basic weapon performance and degrading skills by stressors, principally fear-induced stress and fatigue, which are at the heart of fratricide. The stress of combat and the fatigue of operations quickly degrade performance. Fatigue, in particular sleep deprivation, least affects a soldier's ability to perform manual tasks. But complex mental tasks are the first to decline. Thus, fear, fatigue and friction will first affect command and control, situational awareness and fire control. High-order planning skills, so important to preventing fratricide, decline markedly under the stress of operations.

Despite the effects of fear, fatigue and friction, soldiers can still load and fire their weapons. Indeed, with new technology, their weapons can be loaded faster, be fired over greater distances, and are both more accurate and lethal. Weapons can be fired with little conscious effort; however, the firer's ability to discriminate satisfactorily between targets may be poor. As refined judgement decreases, so does good judgement. This is a phenomenon that has been noted by experienced military commanders from the American Civil War through to the 1991 Gulf War. Recent fratricide incidents in Kuwait, Afghanistan and Iraq may be explained by the tempo of the modern battlefield, especially the unrelenting speed of 24-hour-a-day operations. This latter phenomenon is now moving beyond the soldiers' coping capabilities over extended periods of combat exposure and it is compressing the 'mean time to failure' for commanders.³⁰ Traditionally, it was recognised that the performance of armies usually begins to deteriorate markedly after four days of

Leonards, NSW, 2000, pp. 187–90; and Colonel Kenneth K. Steinweg, 'Dealing Realistically with Fratricide', *Parameters*, vol. XXV, no. 1, Spring 1995, pp. 4–29.

³⁰ Watts, *Clausewitzian Friction and Future War*, pp. 51–2.

operations. Today, this timeline is contracting. While new technology may reduce the physical load on a soldier, it increases the load on their cognitive capacity. More information requires more analysis. More analysis produces more choice. More choice leads to more uncertainty. More uncertainty leads to less action or the wrong action.

For a decade, technologists have been promising that ‘sensors and shooters’ can be linked, making it possible to detect, track and classify most (if not all) objects moving within a battlespace cube of some 200 nautical miles.³¹ Despite these promises of a future characterised by omniscient situational awareness, where sensor systems will ‘burn-off’ the ‘fog of war’, the reality is unlikely to match such predictions, especially for those with their feet planted on the ground. Fear, fatigue and friction will remain the dominating characteristics of ground combat in the immediate future.

Accidental fratricide: uncertainty and discrimination

To act appropriately in uncertain situations, soldiers need a system for making sense of their chaotic surroundings. They need a means for imposing order on this chaos. Like all people, soldiers naturally engage in various efforts to restore mental order as quickly as possible. They reach for an underlying set of theories, assumptions or propositions about the situation around them, an understanding of reality that has served them well in the past. Appropriate action depends upon the soldier’s ability to identify a suitable mental model, or paradigm, for action. This paradigm, for the soldier, is based on doctrine and training or even previous operational experience.

³¹ William A. Owens with Edward Offley, *Lifting the Fog of War*, Farrar, Straus and Giroux, New York, 2000, pp. 123–4; William A. Owens, “‘System-of-Systems: US.’ Emerging Dominant Battlefield Awareness Promises to Dissipate the ‘Fog of War’”, *Armed Forces Journal International*, January 1996, p. 47; and William A. Owens, ‘Introduction: The Emerging US System of Systems’, in Stuart E. Johnson and Martin C. Libicki (eds), *Dominant Battlespace Knowledge: The Winning Edge*, National Defense University Press, Washington DC, 1995, pp. 14–15.

Without a model, however, it is difficult for the soldier to arrive at a decision or to take appropriate action. When faced with uncertainty, soldiers 'will do everything in their power to render their situation comprehensible, that is to identify a suitable paradigm' and 'they will continue searching ... until they find one', or other forces resolve the uncertainty for them.³² This decision-making process, that soldiers rely on to make sense of complex situations in combat, is actually a principal cause of accidental fratricide.

The Army can better understand accidental fratricide by focussing on the dual problems of uncertainty and discrimination in complex environments. Uncertainty stems from a lack of situational awareness while discrimination is an essential component of target identification. Australia's experience in Vietnam shows that many fratricide incidents stem from poor situational awareness. The more recent US experience in the Persian Gulf supports this view and demonstrates that the problem is neither new nor should it be unexpected.³³

Discrimination in complex environments is a cognitive task, but one that will be undermined by fatigue and friction. As an individual's sense of uncertainty increases, the ability to discriminate between targets becomes more difficult, while biases in their decision-making can increase the individual's sense of certainty but end in disaster. Soldiers are routinely obliged to make rapid decisions based on the available information while time pressures and the incompleteness of that information combine to degrade the quality of their decision.

³² Young Back Choi, *Paradigms and Conventions: Uncertainty, Decision Making, and Entrepreneurship*, University of Michigan Press, Ann Arbor, MI, 1993, pp. 7 and 152.

³³ The US Centre for Army Lessons Learned determined that, after studying the prevalence of fratricide incidents during Operation DESERT STORM, situational awareness was the key to understanding fratricide during that war. Centre for Army Lessons Learned, *Fratricide: Reducing Self-Inflicted Losses: No 92-4*, Chapter 1.

These common sources of decision-error lie at the heart of accidental fratricide.

Erroneous decisions often arise from what psychologists describe as ‘frame blindness’.³⁴ Frame blindness occurs when a decision-maker sets out to solve the wrong problem. People in general solve problems by using a ‘rule of thumb’, a heuristic. A heuristic is a mental short cut, using the human brain’s pattern-recognition capacity. The advantage of using a heuristic is that in uncertain conditions the decision-maker can quickly form a mental model around which they can take action.

Two types of decision-making heuristic are a common feature of accidental fratricide: the ‘availability heuristic’ and ‘confirmation bias’. The ‘availability heuristic’ is a bias toward information that is fresh and easily recalled.³⁵ Occasionally the vividness of the information outweighs information that is harder to recall or less interesting to the person. For example, graphical displays provide a powerful and vivid image for commanders that have the potential to overwhelm information presented in other forms. Increasingly, communication and navigation systems rely on graphics and, as more people have access to real-time imagery, the more they will come to rely on it at the expense of sources of information. This may not be an issue if the information is always timely and accurate, but if it is prone to error the decision-maker may come to depend in this source to the exclusion of others. This may become a greater problem for a soldier working in the HNA.

³⁴ J. Edward Russo and Paul J.H. Shoemaker, *Decision Traps: The Ten Barriers to Brilliant Decision Making and How to Overcome Them*, Fireside, New York, 1990.

³⁵ ‘Availability heuristic’, http://changingminds.org/explanations/theories/availability_heuristic.htm, cited 13 September 2005.

It is also natural for people to favour evidence that will confirm rather than challenge their current perception of events. Decision researchers know this as ‘confirmation bias’.³⁶ Confirmation bias is a phenomenon wherein decision-makers have been shown to actively seek out and assign more weight to evidence that confirms their beliefs and ignore or undervalue evidence that could disprove those same beliefs. In other words, humans have a bias towards confirming what they already believe rather than actively seeking to disprove what they hold to be true. It is a form of unconscious over-confidence. In essence, most people have a pre-disposition to identify facts that confirm—rather than disprove—their current plan. The problem for most decision-makers is not getting the facts right but challenging the right assumptions.

The following examples show how these two decision-making errors routinely contribute to accidental fratricide. The first two examples come from 1ATF operations in Vietnam. In June 1970, elements of 7RAR were conducting operations in the Phuoc Tuy Province when HQ A Company wounded members of their sub-unit. In this case, a machine-gun sentry fired on two soldiers from one of A Company’s platoons. The report into the incident contains evidence by the soldier who opened fire in which he states that he based his identification on the fact there were only two ‘enemy soldiers’. He knew their own troops were all operating in platoon-sized patrols, not small groups, and that their uniforms ‘seemed too dark to be Jungle Greens’ as worn by Australian troops.³⁷ Another soldier confirmed this assessment as he saw only one figure and he was not aware of any friendly forces in the area. The non-commissioned officer (NCO) involved gave similar evidence identifying that he thought one of the two figures was squatting just like a Vietnamese.

³⁶ ‘Confirmation bias’, http://changingminds.org/explanations/theories/confirmation_bias.htm, cited 13 September 2005.

³⁷ Lieutenant Colonel R.A. Grey, 7RAR R723-70-7 ‘Investigating Officers Report Accidental Wounding’ to HQ 1ATF, 16 June 1970, AWM103, R478/1/203.

He then saw the two figures moving away, giving the impression that they were fleeing.³⁸ Unfortunately, a navigational error led the Australian platoon into an area where there were not supposed to be any friendly troops. The sentry was not expecting to see any friendly elements. The soldier's first perception was the two figures must be enemy and all the other evidence, even that provided by other observers, supported this initial conclusion.³⁹

This incident is not the only one of its type. In other tragic incidents involving 8 RAR in mid-1970, a junior NCO and a soldier were killed when they were mistakenly identified as enemy. One man had inadvertently moved out in front of his section when they were occupying a night ambush position. In this case, the soldier who fired believed that the figure he saw, without a hat and standing in the killing area, was an enemy and that he was acting in manner that indicated that he was about to engage the section.⁴⁰

Five months later a similar incident occurred in 7 RAR, but in this case led to the death of one and the wounding of two others. The investigating officer noted that the NCO who gave the order to open fire:

was convinced the people he saw were Vietnamese. [Sapper] SPR _____, the lead man of the recce party, is of Yugoslav descent, short with jet black hair and very dark features. He was not wearing a hat. He could, when shirts are blackened with sweat and grime, be easily identified as a Vietnamese with much better conditions of observation than available ...⁴¹

Clearly these two incidents are cases of frame blindness and confirmation bias. The sentry's interpretation of events fitted a

³⁸ Private J.S. Bolt, 'Statement by 218777 PTE JS Bolt', Annex C to 7RAR R723-70-7, 14 June 1970, AWM29, item 7/R1/3/14.

³⁹ AWM103, R478/1/189.

⁴⁰ *ibid.*

⁴¹ Major N.R. Smethurst, R1-3-21 'Investigating Officer's Report', 29 October 1970, AWM290, item 7/R1/3/21.

particular perception based on his initial expectation. Not surprisingly, he interpreted every new piece of information as consistent with that view. As with the first incident, when the clothing seemed ‘too dark to be Jungle Greens’ and the figures were ‘fleeing’, five months later the features of the approaching soldier, combined with ‘not wearing a hat’ fitted the profile of a Viet Cong (VC). But this is not the only mental challenge soldiers face when deciding if a target is enemy or friendly.

In the next example, a similar pattern emerges from a more complicated situation in a joint operation where air and ground elements were working closely together. In this incident, a Royal Australian Air Force (RAAF) Light Fire Team accidentally engaged elements of 6 RAR. The commanding officer of the RAAF unit noted in their defence that, ‘by virtue of the behaviour pattern of the troops and the distance from known friendly locations [the RAAF pilot] was convinced that his was a legitimate target’.⁴² This raises another well-known decision error known as the ‘three-to-five rule’. Research shows that, when confronted with evidence of change, humans tend not to take the first new input seriously. This is a sensible approach because to accept every new, conflicting piece of information would cause utter confusion and uncertainty in the person’s mind. For a person to change their mind requires between three and five new inputs. For the pilot to change his decision to engage the ground troops he would have had to be exposed to three or more separate sources of doubt before he was likely to overturn his original choice.⁴³

⁴² Wing Commander R.W. Hibben, ‘Statement by Commanding Officer No. 9 Squadron RAAF’ included in Brigadier C.M.I. Pearson, Investigation ‘Engagement of 2 Pl A Coy 6RAR by Light Fire Team (RAAF) on 17 Jun 69’, 28 June 1969, AWM103, R478-1-47.

⁴³ The ‘three-to-five rule’ is based on a substantial body of psychological research that has been conducted for market research, advertising and consumer behaviour. For its role and applicability in

The same pattern emerges in many of the patrol clashes or incidents where sentries accidentally engaged members of their own organisation returning to the perimeter but from an unexpected direction.⁴⁴ Many Vietnam veterans describe similar experiences where they almost engaged other Australians thinking them to be enemy, usually because the soldiers approached from an unexpected direction and without warning. It is notable that even in the highly trained SASR two of seven fatalities in Vietnam were incidents of this type. British research confirms the observation that pre-existing knowledge can influence what a weapons operator thinks they see through a weapon sight.⁴⁵ Often, the subtle but deadly chain of logic, rather than neglect or ineptitude, leads to accidental fratricide. As one experienced combat officer concluded in his investigation of a typical friendly fire incident in Vietnam:

the incident was an unfortunate one which was not occasioned by neglect on the part of any member being too quick on the trigger or failing to make positive identification before firing. It was, I consider, a misfortune of war in which two soldiers were unlucky enough to be wounded.⁴⁶

Dietrich Dorner, in his study of decision-making in complex environments, argues that '[f]ailure does not strike like a bolt from the blue; it develops gradually according to its own logic'.⁴⁷ Indeed, as complexity and apprehension (in a soldier's case, fear) increases, so does people's reliance on decision-making methods that makes failure more unavoidable. Fear, fatigue and friction, combined with

the military see Captain Kevin B. Smith, 'Combat Information Flow', *Military Review*, vol. LXIX, no. 4, April 1989, p. 44.

⁴⁴ David Horner, *SASR: Phantoms of the Jungle, A History of the Special Air Service Regiment*, Allen and Unwin, North Sydney (NSW), 1989, p. 390; and interview with Warrant Officer Class 1 Ola Stevenson, 17 December 2004.

⁴⁵ Penny, 'Combat Identification', p. 52.

⁴⁶ Major A.M. Robb, R734-70-7 'Investigation by 311461 Major A.M. Robb', 14 June 1970, AWM29, item 7/R1/3/14.

⁴⁷ Dietrich Dorner, *The Logic of Failure: Recognizing and Avoiding Error in Complex Situations*, Metropolitan Books, New York, 1996, p. 10.

the time constraints on taking action and the uncertainty of the battlefield, compound to produce individual decision error. Under conditions of uncertainty, there is an eagerness to take action and seize control. New information undermines the ability to act because it ‘muddies the picture’.⁴⁸ Quite rightly, military training reinforces this behaviour by favouring action and conformity to routine over reflection and introspection.

The third example of decision errors demonstrates that technology is no guarantee in the fight against fratricide. In this incident, it is possible to see how even trained units with skilled operators can mis-identify a friendly and how this situation flows from poor situational awareness and decision-making bias. In 1994, during Operation *Provide Comfort II* over Iraq, two US Air Force (USAF) F-15C fighters shot down two US Army Black Hawk helicopters, killing all 26 peacekeepers on-board. Throughout the incident, both the fighters and helicopters were under the surveillance of an USAF airborne early warning and control aircraft. The problem was the two fighter pilots were not expecting to see friendly helicopters in the area. When they sighted the Black Hawks, in their ‘mind’s eye’ the fighter pilots were expecting to see enemy aircraft. The identification features the pilot used confirmed in his mind that the aircraft were Soviet and therefore must belong to the Iraqi Air Force. He filtered the available information to reinforce his first opinion, thus beginning a tragic chain of events.

If troops, either on the ground or in the air, are expecting to see friendly forces then they will take more care to identify the target. If they are not expecting friendly forces, however, then they will begin with the assumption that anything unknown is an enemy and filter the available information to confirm that view. In the case of the F-15 pilots, they were working with a particular mental frame. Drawing on the ‘availability heuristic’, they did not believe there were any

⁴⁸ Dorner, *The Logic of Failure*, p. 100.

friendlies in their area. They worked to gather information to confirm their bias. As the Identification Friend or Foe (IFF) system was working intermittently and gave inconclusive responses, possibly because the helicopters were flying low over rugged terrain, the pilots became convinced they were hostile. The presence of technology did not help the pilots or those in the Black Hawk helicopters. Decision-making in complex situations comes down to individual expectation and circumstance. Once an individual has a firm view of the situation and has picked up extra cues to reinforce that perception, it becomes difficult for new information to influence that view. The decision-maker works hard to clarify the situation and is unlikely to let it go easily. It is possible new technology will further complicate the issue. After all, the machine knows best.

In 2001, a US university undertook a laboratory study into the potential mis-use and dis-use of combat identification (CID) systems such as IFF. Although research into this area is far from conclusive, early findings show that:

human operators are not especially sensitive to the reliability of an automated decision-making aid. Regardless of the aid's reliability, human operators are likely to rely on the decisions reached by the aid.⁴⁹

Using a simulated CID system, the study participants came to depend on the automated system even when its reliability was proven to be very low. This suggests that if the Army were to field an automated CID system then users would come to rely on it, even in inappropriate circumstances. Rather than using the CID system to aid their judgement, the operator comes to depend on it as the sole arbiter. With sea and air platforms engaging targets at long-range this may not be such an issue, but for ground troops engaged at

⁴⁹ Mary T. Dzindolet, Linda G. Pierce, Hall P. Beck, Lloyd A. Dawe and Wayne B. Anderson, 'Predicting Misuse and Disuse of Combat Identification Systems', *Military Psychology*, vol. 13, no. 3, 2001, p. 163.

shorter ranges in complex terrain, this will be a problem. Before seeking a technological solution that may have unintended effects on combat behaviour, the Australian Defence Force should undertake further research into the human factor implications of employing ground CID systems.

Military-industrial fratricide: novice and expert

When the Australian Army deployed to Somalia in 1993 and East Timor in 2000, it confronted what appeared to be an abnormal increase in the rate of unauthorised discharges (UDs). Investigation initially focussed on the F88 Steyr, seen as the culprit because of a belief that this problem was something completely new. Later research identified that, however, far from being an aberration, the Army should have anticipated this problem, considering the similar pattern of events that occurred in deployments to Vietnam. The problem was that most of the Army's Vietnam experience was lost as those veterans gradually left the service and the Army's corporate memory eroded in the intervening 30 years.⁵⁰

Gaining expertise involves moving through a set of identifiable stages.⁵¹ Cognitive psychologists Hubert and Stuart Dreyfus suggest five stages: novice, advanced beginner, competence, proficiency, and expertise. Novice is the lowest level. Instructors teach the novice soldier to apply the rules without attention to the context; to do, not think. With time and experience, the competent soldier begins to develop an overall decision-making strategy through which they can apply the rules learned as a novice. At this stage, the Army Training System delivers a 'trained' soldier to a unit. The soldier is no longer merely following the rules, but performs the task with a goal in mind.

⁵⁰ Robert Hall, 'Accidental Discharges — The Soldier's Industrial Accident in Vietnam and East Timor', *Australian Defence Force Journal*, no. 149, July/August 2001, pp. 27–34.

⁵¹ Hubert L. Dreyfus and Stuart E. Dreyfus with Tom Athanasiou, *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*, The Free Press, New York, 1986, pp. 21–36.

Until reaching this stage, the soldier is deciding in a deliberate and conscious—almost mechanical—way. With experience comes proficiency. The proficient soldier does not necessarily engage in conscious deliberation, ‘things just happen’. The instinctive reaction may arise out of experience gained in a similar situation in the past, in training or on operations, but they may appear unexplainable or ‘lucky guesses’ to an outside observer. There is a spontaneous understanding or ‘seeing’ of a plan or strategy. An expert person no longer sees the task as a sequence of problems to solve, nor do they worry about the future or devise plans to complete the task. The expert has an intuitive understanding of what to do.

While all soldiers progress through these stages in their military service, there will be occasions when even the nominally expert soldier will regress to an earlier developmental stage as they are faced with an unfamiliar situation. The experience in Vietnam highlights how soldiers deployed from Australia after a 12-month training cycle still faced adjustment problems in an unfamiliar environment that cannot be replicated in training.

While accidental fratricide can occur in any phase of a deployment, the most dangerous periods for military-industrial fratricide mirror the soldier’s experience in the new environment. Hence accidents, including fratricide, tend to occur at the beginning and towards the end of the deployments. A survey of accidents in 1ATF between July 1969 and June 1970 shows that the number of accidents in a 12-month deployment peaked during the first three months of the tour, then dropped off and peaked again (though at a lower level) in months eight and nine. The report noted:

The suggestion here is that whilst soldiers are acclimatizing and adjusting to their new environment during the initial stages they are more accident-prone, and during the 8–9 month period in-

theatre ... they reach an emotional low which makes them more susceptible to accidents.⁵²

While it appears that new soldiers are most at risk from inexperience early in a deployment, veterans are at greater risk later as the cumulative physical and psychological toll of deployment affects their judgement. For the novice, the initial lack of experience undermines effective decision-making. For the expert, fatigue and boredom reduces their capacity to make sound judgements.

This evidence suggests that even the 'competent' soldier is at risk to military-industrial fratricide during the initial period of operational service. This phase could last anywhere between the first week and up to three months depending on the length of the deployment and the extent of their pre-deployment training. In this period, the soldier becomes familiar with operational conditions, including mastering the Rules of Engagement, and adjusts to the permanent carriage of weapons and handling live-ammunition.⁵³

The second period coincides with the 'expert' soldier's general physical and mental decline. Combat fatigue or boredom decreases individual effectiveness. This begins after approximately six months of continuous service. During this time, the danger of fratricide, both accidental and especially military-industrial, increases proportionally with the soldier's fatigue.⁵⁴ Of course, this varies with the intensity of the operational experience, but anything over six months' exposure is likely to result in a marked increase in the danger of fratricide.

⁵² Australian Army Operational Research Group, *Report 1/71: Accidental Casualty Study-South Vietnam*, by Major J.H. Adams, February 1971, p. 21, quoted in Hall, *Combat Battalion*, p. 175.

⁵³ Breen, *A Little Bit of Hope*, pp. 91, 98, 138–9 and 145; and Hall, 'Accidental Discharges', pp. 27–34.

⁵⁴ Dinter, *Hero or Coward*, pp. 66–7; and Holmes, *Firing Line*, p. 214.

As noted at the beginning of this section, this pattern was also evident during the Australian deployments to Somalia and East Timor. The initial period saw a high rate of UDs, but in both cases the deployment periods were shorter and so it is not clear if there would have been an increase if the troops had been left in-theatre longer. This pattern is worthy of further operational evaluation. Of particular interest is whether the rise experienced between the seventh to ninth months is a reflection of the length of the 12-month tour, or if shorter deployments experience a similar rise in accidents after the half way point, as the troops were beginning to lose focus or mentally prepare to return home. The answer to this question could assist ADF planners in determining rotation and rest policies for deployments and help commanders better manage in-theatre safety.

There is, however, a need for caution in attempting to draw fixed or permanent lessons from this experience. The Australian pattern of friendly fire incidents in Vietnam differs markedly from the US experience. In Vietnam, most major Australian units rotated in and out of country as complete units, although they did receive individual reinforcements to replace casualties. US units remained in country and their personnel rotated in and out on a strict 12-month basis. This difference highlights the role that rotation policies, training systems and unit cohesion play in the prevalence of fratricide. Australian accidents were concentrated in two periods at the beginning and towards the end of the 12-month tour; US experience found that as soldiers' combat experience increased, fratricide rates also increased.⁵⁵ Minimising the risk of fratricide will always be as much an art as it is a science. By identifying the range and influence of variables, such as individual training, unit readiness, small group cohesion, operational intensity, and rotation policies, policy-makers and planners can move beyond battlespace de-confliction toward a better understanding of the human and organisational factors that are the

⁵⁵ See Major Charles F. Hawkins, 'Friendly Fire: Facts, Myths and Misconceptions', *Proceedings*, vol. 120, issue 6, June 1994, pp. 54–9.

actual source of the problem. It will also allow them to appreciate the counter-intuitive requirement for commanders to sometimes shoot at their own troops, which will be considered next.

Calculated fratricide: leaders and cohesion

The Vietnam War also saw a number of occurrences where Australian commanders had to risk fratricide in order to minimise their own casualties. These cases involved the unusual circumstances of commanders requesting friendly fire on their own position or calling in supporting fire so close that friendly casualties were a likely outcome. Casualties under these circumstances were not accidental but resulted from the commander's deliberate choice—albeit one made with the aim of ensuring the survival of his command, achieving the mission, or in the hope of actually minimising his own casualties.

From the earliest days of Australia's involvement in Vietnam, commanders found themselves confronted by an enemy who sought to avoid the worst effects of the coalition's superior firepower. In the complex terrain of South Vietnam, the VC deliberately 'hugged' Australian positions in the hope of discouraging the use of indirect-fire support and close air support (CAS) because of Australian concerns over fratricide. The VC were often foiled because Australian commanders, when the circumstances demanded, were not only prepared to use their fire support, but they were also prepared to hazard some of their own troops if this meant saving more.⁵⁶

Such circumstances faced Australian commanders on 18 August 1966, during the desperate fighting that raged around D Company, 6 RAR, in the Long Tan rubber plantation. Artillery support was a key factor in D Company's survival but it was not always clear where the Australian platoons were located and communications were difficult. The New Zealand forward observer had no choice but to

⁵⁶ For an early example see McNeill, *To Long Tan*, pp. 278-81.

risk Australian casualties as he continuously directed artillery fire across a battle area covering no more than three football fields, often in heavy rain. The only way to deny the VC tactic of ‘holding the belt with one hand and punching with the other’ was to bring in the artillery fire ‘danger close’.⁵⁷

During the battle around Fire Support Base (FSB) Coral in May 1968, there were other cases involving Australian fire that may have wounded and possibly killed some Australian troops. On the northern perimeter of the FSB, Lieutenant Tony Jensen was commanding the 1 RAR Mortar Platoon and it was his platoon that took the brunt of several North Vietnamese Army (NVA) assaults. When mortar and artillery fire failed to halt the NVA, Jensen’s platoon faced being overrun. When it became too late to withdraw his men, Jensen held his ground as the NVA swarmed over the position. In desperation Jensen directed the fire of 90 mm recoilless rifles over their position, ordering his own men to stay below ground as thousands of small darts swept away anything above ground.⁵⁸ Later, the supporting artillery opened fire with their splintex, and when these ran out they switched to high-explosive rounds.⁵⁹ These actions undoubtedly resulted in some incidents of Australian fratricide, but what is certain is that it was the gunners’ steady fire over open sights that prevented the rest of the Australian position from being overrun.⁶⁰

On the following night, a renewed NVA assault on FSB Coral penetrated Lieutenant Neil Weekes’ platoon position. The enemy placed a heavy machine-gun in one of his forward pits. After discussing the situation with his commanding officer and weighing

⁵⁷ McNeil, *To Long Tan*, pp. 315, 319 and 342.

⁵⁸ McNeill and Ekins, *On the Offensive*, pp. 367–8.

⁵⁹ *ibid*, pp. 368–70; and Lex McAulay, *The Fighting First: Combat Operations in Vietnam 1968–69 the First Battalion, The Royal Australian Regiment*, Allen and Unwin, North Sydney, 1991, p. 54.

⁶⁰ McNeill and Ekins, *On the Offensive*, p. 317.

up the possibility of friendly fire casualties, Weekes directed the battalion mortar onto the enemy group. Although two Australian soldiers were wounded, the enemy penetration was halted, stopping a dangerous situation from deteriorating further.⁶¹

Incidents of this type also occurred during the many actions when Australian troops assaulted VC bunker systems. Given the complex terrain, the close engagement ranges and the limits of the supporting fire from aircraft, artillery and tanks, it is likely that some Australian casualties classified as killed in action and wounded in action were the result of friendly fire. The problem is that without courageous commanders making that calculated choice, friendly casualties would undoubtedly have been higher.⁶² These commanders did not take lightly the decision to risk fratricide, but nor did they shirk their responsibility.

For commanders to take the decision to call in fire on their own unit, and for forward elements to remain steady under those conditions, suggests a high degree of confidence and trust. The ‘regimental system’, as a critical enabler of social cohesion, may be an important factor in a commander’s ability to confidently make a decision to call in fire on his own unit. The regimental system is far more than a tactical and administrative organisational concept.⁶³ The regiment is

⁶¹ Gary McKay, *Vietnam Fragments: An Oral History of Australians at War*, Allen and Unwin, St Leonards, NSW, 1992, pp. 125–6. Lieutenant (later Brigadier) Weekes was awarded the Military Cross for his leadership and bravery on this and other occasions. McNeill and Ekins, *On the Offensive*, p. 377.

⁶² For an analysis of the Australian attacks on bunker systems in Vietnam see Robert Hall and Andrew Ross, ‘Lessons from Vietnam — Combined Arms Assault against Prepared Defences’, in Michael Evans and Alan Ryan (eds), *From Breitenfeld to Baghdad: Perspectives on Combined Arms Warfare*, Land Warfare Studies Centre, Duntroon, ACT, July 2003, pp. 34–52.

⁶³ For an introduction to the purpose and elements of the regimental system see Holmes, *Firing Line*, pp. 307–315; and Kellett, *Combat Motivation*, pp. 46–58. Strictly speaking, the Australian Army does not maintain a ‘regimental system’ along British lines; for historical reasons the

a uniquely shaped social structure central to maintaining social order and cohesion on the battlefield. It is a focus for loyalty, pride, self-esteem, comradeship and protection. The regiment is central to fostering a belief in something bigger than the individual and is critical to shaping the expectations of new members. Investigations following the Second World War and Vietnam show that soldiers well integrated into a primary group responded to danger by fighting, while those who were not were more likely to flee or avoid their duty.⁶⁴

So, while there is danger in drawing permanent lessons from a particular operation or war, these observations should send a warning signal to those planning the HNA. Under the modular unit structure proposed under HNA, where formations and units will be broken and re-made to suit the mission, some additional form of ‘cement’ will be required to ensure that these *ad hoc* task groups remain cohesive. Failure to do so may lead to ‘brittle’ organisations that are not only more prone to fratricide, but are also more vulnerable to the overwhelmingly negative impacts of these events.⁶⁵ It may also lead to commanders who are not prepared to make those ‘hard calls’ when friendly fire casualties may result.

Fratricide highlights the consistency of human behaviour in complex environments. In particular, ‘accidental fratricide’ and ‘military-industrial fratricide’ demonstrate the limits of human behaviour in an environment characterised by fear, uncertainty and danger. Paradoxically, ‘calculated fratricide’ demonstrates the more positive features of

Australian version has always been unit-based. Although attempts have been made at various times to build a true regimental system, the small size of the Army and the large size of the country have thwarted most of these efforts and identity in the Army is still very much unit-based.

⁶⁴ Kellett, *Combat Motivation*, pp. 100–101; and EA Shils, ‘A Profile of a Military Deserter’, *Armed Forces and Society*, vol. 3, no. 3, Spring 1977, pp. 427–32.

⁶⁵ For an analysis of the advantages of the two systems and alternatives, see Russell W Glenn, *Reading Athena’s Dance Card: Men Against Fire in Vietnam*, Naval Institute Press, Annapolis, 2000, pp. 92–114.

military social organisation. Confidence, cohesion, leadership, unity and familiarity will remain important in all military organisations. The question for those planning the HNA is to what extent a modular approach to Army force structure erodes the social cohesion that comes from a stable regimental system. Alternatively, in a modular force, how will the Army's leaders preserve these critical aspects of social cohesion?

Lessons of friendly fire for the HNA

Fratricide has been a consistent problem for the Australian Army throughout its century of service. Although the digitisation of communications, improving sensors and greater connectivity between the environmental services is leading to a more networked force and better situational awareness, there is no reason to believe that fratricide will magically disappear.

The world of the new millennium is in the midst of far-reaching changes in international security with the forces of technology and globalisation seemingly transforming the practice of war. As if to drive this point home, the terrorist attacks on the United States on 11 September 2001 (9/11) heralded changes apparently so profound that many believe the experience of the past to be irrelevant. There is a widespread belief that, after 9/11, the security challenges and threats that Western armies face are radically different to those of the immediate past. Just how different these operations will be for the Australian Army and what type of force it will have to project in the 21st century is a question with which the Army is grappling. The best indications are that those operations will, at worst, be a type of 'three block war'. In this scenario, ground forces, operating as part of joint and perhaps coalition forces, may be engaged simultaneously in nation-building, peacekeeping and warfighting, in a fluid and politically charged situation complicated by religious and cultural nuances. It is an environment that can change rapidly, from one end of the 'block' to the next and back again, and it is an environment that is non-linear and populated with friendlies, enemies, neutrals,

non-government organisations and the media. In this complex world an enemy will try to exploit each of these groups to offer an asymmetric threat, and both military commanders and soldiers will be called upon to be part-diplomat, part-teacher, part-social worker, while still functioning as a warfighter.

The changes in the international security environment since the fall of the Berlin Wall, the collapse of communism, and the re-emergence of international terrorism led some commentators to declare that the nature of war has changed. This pronouncement is at the very least premature and more likely wrong. While the impact of the latest bout of international terrorism and insurgency may have changed the characteristics of military operations in the foreseeable future, this is hardly a reason to declare that the fundamental nature of war changed. Warfare remains a human activity revolving around the use of violence (or the threat of violence) and it is politically motivated. Carl von Clausewitz tells us that ‘all wars are things of the *same* nature’ and although wars have two natures, ‘objective’ and ‘subjective’, the former remains permanent while only the latter changes frequently.⁶⁶ In other words the character of particular wars in different ages will change, as the social, political and technological conditions change, but its very nature, those things that define war as war, remain fixed. To Clausewitz, the four enduring elements of the ‘climate of war’ are ‘danger, exertion, uncertainty, and chance’.⁶⁷ To this he adds ‘friction’, that intangible characteristic that makes the simple complicated and the easy difficult. Thus, war remains:

[that] remarkable trinity—composed of primordial violence, hatred, and enmity, which are regarded as a blind natural force; of the play of chance and probability within which the creative spirit is free to roam; and of its element of subordination, as an instrument of policy, which makes it subject to reason alone.⁶⁸

⁶⁶ Clausewitz, *On War*, p. 606 (emphasis in the original) and p. 85.

⁶⁷ *ibid*, p. 104.

⁶⁸ *ibid*, p. 89.

Of course, no one knows with certainty what the future holds and any predictions, including those in this study, must be treated with caution.

What is certain is that the battlespace of the future is being shaped by trends—more evolutionary than revolutionary—that will continue to influence how armies organise and train. The HNA will have to adapt to confront these challenges, which can best be summarised as:

First, the technology of war creates a steady rise in the lethality of weapons and munitions, greater mobility, and the endless requirement for dispersion ...

Second, battlespace is continually expanding ...

Third, expanding battlespace increases the volume of information that is relevant to the commander's coherent view of the operational environment ...

Fourth, expanding battlespace dramatically increases the need for timely and accurate information because the dispersion of forces and the volume of information potentially degrade the coherency of battlefield perception ...

Fifth, all arms and services on the ground develop a need for the same mobility and nearly the same degree of protection as the warfighting organizations they support ...

Sixth, after its introduction to warfare, the technology of aviation (manned and unmanned) begins, on the one hand, to reinforce the effects of existing trends, and, on the other, to assist military organizations to cope with the aforementioned effects ...

Finally ... the strategic environment matters. When international stability is at risk, strategic considerations dominate national policy in democratic states.⁶⁹

These trends have been evolving at an increasing pace since the beginning of last century—each has and will continue to influence fratricide on the future battlefield.

⁶⁹ Douglas A Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century*, Praeger, Westport, CT, 1997, pp. 50–1.

Commanders and soldiers will still have to make instant decisions about targets hidden in complex terrain with an array of neutrals and non-combatants. Unlike the conflicts of the late 20th century, where the enemy was usually uniformed differently and equipped with Soviet-block weapon systems, the ‘enemy’ of tomorrow may be dressed in similar uniforms to the coalition forces, and friend and foe alike may be equipped with similar or identical weapon systems. As Christopher Bellamy has observed:

One of the interesting sartorial changes of recent decades has been that armed forces the world over look increasingly alike. In Bosnia all three local factions wore camouflage uniforms which closely resembled US or British uniforms. Identification has always been a prime requirement — more than concealment.⁷⁰

In Vietnam, mis-identification was a common problem. Accurate target identification is dependent upon the prevailing environmental conditions and the dress, appearance and equipment of the target. In close-country operations, quick and accurate identification of a target was a significant issue when seconds were important and often those who fired first won the fight. Thick vegetation reduced visibility and led to close engagement ranges, making it difficult to identify a target quickly, especially as it was often in low ambient light. The similar dress of enemy forces, civilians and some coalition forces often made identifying targets ambiguous.⁷¹ The common physical characteristics of enemy forces, civilians and many of the other coalition forces also compounded the problem of distinguishing hostile from non-hostile forces.⁷²

⁷⁰ Christopher Bellamy, *Knights in White Armour: The New Art of War and Peace*, Hutchinson, London, 1996, p. 200.

⁷¹ Major KV Molloy, Annex A to HQ 1ATF R478-1-203 ‘Investigation into Wounding of 3797260 Private PJ Egan and 3795270 Sapper IS Pitt of 7 Jun 70’, dated 8 July 1970, AWM29, item 7/R1/3/14.

⁷² Captain AP Thompson, R723-2-6 ‘Investigating Officers Report Wounding of Busman Scout Nguyen Van Vinh’, 21 May 1970, AWM29, item 7/R1/3/15.

Target identification will remain a challenge for the HNA. It is likely that many operations in the 21st century will be conducted in major cities. Instead of primary jungle, tomorrow's soldiers will face an urban jungle where combat will still be up close and personal. Outside these areas, the HNA will still face similar problems even if under radically different environmental conditions. Since the 1970s, the lethality and range of ground-based weapon systems has increased to a point where they have out-reached the ability of the firer to discriminate one target from another at extreme ranges. In the open country of the desert that was characteristic of the most recent Gulf wars, coalition fratricide casualties often resulted from mistaken identification mostly because of increased engagement ranges and battlefield obscurity.⁷³ No matter where Australian soldiers fight tomorrow they will still be faced with difficult choices of when to fire and when not to engage.

Meeting the warfighting challenges of tomorrow requires armies to think differently about how they will structure, train and equip themselves. The HNA addresses many of these facets and looks to create a more flexible and agile force. The Army's concept of *Complex Warfighting*⁷⁴ anticipates that the future force structure will rely on modular combined arms teams that are optimised for close combat. These teams will be small, semi-autonomous and networked. Significantly, they will incorporate traditional elements of the combined arms team but could also include non-traditional elements such as special forces, civil affairs, intelligence and

⁷³ During Operation *Desert Storm*, direct-fire vehicular engagements caused 12 of the 15 Army friendly fire incidents. Of these all but one occurred at night and the majority occurred within 1500 metres but under conditions that included significant battlefield obscurity from dust, smoke, rain or fog. Centre for Army Lessons Learned, *Fratricide: Reducing Self-Inflicted Losses: No 92-4*, Chapter 1.

⁷⁴ Australian Army, *Complex Warfighting*, endorsed by the Chief of Army's Senior Advisory Committee on 7 May 2004, <http://www.defence.gov.au/army/lwsc/Publications/complex_warfighting.pdf>

psychological warfare capabilities. The aim is for these teams to have the capacity for protracted independent operations, but also the ability operate within a joint interagency framework:

Combined arms teams are essential in generating the orchestration of effects, task versatility and mission agility that are necessary for effective Complex Warfighting. However, the nature of 21st century combined arms teams will be significantly different from the industrial-age combined arms teams familiar to 20th century soldiers.⁷⁵

There is, however, a danger in dismantling organisations and rebuilding them *ad hoc*. A modular approach that does not draw on the regimental system and includes additional functions that senior commanders might ‘bolt on’ to existing unit structures has the potential to dilute the social benefits of the regimental system. Traditionally, military organisations value continuity and unity as the source of confidence and trust. Colonel Ardant du Picq noted that ‘A wise organization insures that the personnel of combat groups changes as little as possible, so that comrades in peace time maneuvers shall be comrades in war’.⁷⁶ While Ardant du Picq was reflecting on the prototypical industrial-age force, his themes of familiarity and continuity persist even as technology is changing the character of war.

Conclusion

In his exhaustive study of the 1994 Black Hawk fratricide incident over northern Iraq, Scott Snook concluded that, for all of his research and probing, ‘the hubris-driven investigative reporter’ in him failed to uncover the ‘startling revelation that would blow this

⁷⁵ *ibid*, p. 15.

⁷⁶ Colonel Charles Jean Jacques Joseph Ardant du Picq, *Battle Studies: Ancient and Modern*, Military Service Publishing Company, Harrisburg, PA, 1946, p. 96.

case wide open'.⁷⁷ After de-constructing this friendly fire incident in detail, he was forced to conclude that:

There weren't any catastrophic failures of material or equipment; hence, nothing to fix. No gross negligence or act of God caused this tragedy. The more I looked for traditional culprits, the more I realized that this accident occurred not because something extraordinary had happened, but rather just the opposite. This accident happened because of, or perhaps in spite of, everyone behaving just the way we would expect them to behave, just the way theory would predict — given a clear understanding of the circumstances. Indeed this accident was “normal”, not only in the sense that Perrow suggests — “that it [was] an inherent property of the system” ... But rather it was normal because it occurred as a result of normal people behaving in normal ways in normal organizations.⁷⁸

Snook's finding is that although people made errors at the individual, group and organisational levels, there was not any single cause that could provide that 'holy of holies': the 'smoking gun'. Rather, it was a series of small errors or miscalculations combining in unforeseen ways that led to tragedy. Failure has its own logic. Removing any of the links in the chain of errors may have averted the tragic results but the 'inevitability' of this event was not predictable. It was normal people trying to do the 'right thing' in a complex and demanding environment where deadly force is a constant.

More recently, Lieutenant General David D. McKiernan, then commander of the Coalition Forces Land Components Command in Iraq, described how this complexity influenced fratricide on the modern battlefield:

What really makes all the difference in mitigating the risk of fratricide has nothing to do with technology. It has everything to do with the tactical discipline of units, of using the right fire support coordination measures, the right tactical graphics and the right

⁷⁷ Snook, *Friendly Fire*, p. 202.

⁷⁸ *ibid.*

weapons control status and discipline of formations ... [but] when you're fighting, for instance, in a dust storm at night in an urban area with special operating forces, conventional forces, air power, all operating in the same battle space, you are never, ever going to completely mitigate the risk of blue-on-blue fire. That's a danger we have in this profession that no amount of technology will ever completely erase.⁷⁹

The traditional approach to military fratricide is to see it as an aberration, a failure of some individual or the system, and hence something that can be fixed. What this approach fails to adequately address is the human element in the equation. Some of the risks of fratricide may be lessened with technological solutions, by improving situational awareness, assisting combat identification and making weapons more accurate. In some cases, however, those same technological solutions may actually increase the chances of a catastrophic fratricide event. There are many advantages to more precise weapons and the ability to positively discriminate, but when something goes wrong and the machine fails, those same hi-tech advantages will rebound on the friendly force. One of the costs of modern warfare is that the systems that produce impressive results against foes will also multiply the effects of mistakes in combat.

The HNA faces a complex and ambiguous future, one that is not predictable. Even with the advances in communications technology, the proliferation of sensors and the networking of joint forces, war will remain a contest of wills. By directly confronting and addressing complex and ambiguous issues, such as fratricide, the HNA will be in a better position to deal with the challenges of warfighting in the 21st century. These solutions will not, however, lend themselves to 'silver bullet' technological options. Rather, the solutions to this phenomenon will be complex—just like the

⁷⁹ Lieutenant General David D. McKiernan, Transcript of Department of Defense Briefing on Operation IRAQI FREEDOM, 23 April 2003, go to <http://www.defenselink.mil/> (cited on 13 September 2005) and click on 'Transcripts' and then 'Transcripts archive' and pick the relevant transcript.

problem they are attempting to solve—and they will be multifaceted, with second- and third-order consequences that may not always be predictable, even with the best will and means.

The lessons that the phenomenon of fratricide can teach the HNA is that warfighting, especially close combat in complex terrain, will still rely on tired and frightened soldiers and commanders making decisions in an environment characterised by uncertainty and friction. In this sort of environment all armies face the possibility of disintegration if the problem of fratricide is not adequately addressed. While the future is not predictable, it is probable that the various types of fratricide will continue to plague the Army just as they have for the past century.

Accidental fratricide will continue to occur despite the best efforts to improve situational awareness and combat identification. But networking the force and addressing issues such as CID may help to mitigate the risk. Military-industrial fratricide will remain a problem for both novice and expert, but strategic and operational planners will have to make conscious decisions around the size of the forces committed, the pre-deployment preparation, deployment periods and in-theatre rotation policies. At the opposite end of the spectrum, the HNA will still have to cultivate professional and dedicated leaders who are prepared to risk their lives and the lives of their soldiers, even if this is to friendly fire. This is a matter of leadership and cohesion. These are the real challenges for the HNA: learning to accommodate the realities of human performance with the strengths and weaknesses of new technology.

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