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The RAAF's P3C Orions are on the verge of a multi-million dollar technological update which will provide Australia with the most modern and efficient maritime patrol aircraft available in the world.
The Defence Signals Directorate —
Its Role and Functions

By Ken Barnes, Department of Defence

Functions of DSD

This article seeks to answer the question, "What is the Defence Signals Directorate and why is it surrounded by mystery?". After reading it, you should at least know something about DSD's role and functions since there is no mystery about those. But you will not know much about how DSD performs those functions because to explain that in any detail would take more space than the editors have allowed and because some of the methods used by DSD are classified.

DSD is located in Buildings M and N of the Russell Complex, and its field activities are in a number of areas in Australia and overseas. It has close connections with the ADF's Electronic Warfare (EW) units and establishments, notably RANTEWSS at Nowra, 7 Signal Regiment (EW) at Cabarlah and EW Squadron, RAAF, at Edinburgh.

Control and Policy Guidance

DSD is a vital part of the Australian intelligence and security community and takes its place as a collector of intelligence with those agencies which also collect and/or assess intelligence from various sources, namely:

- The Office of National Assessment;
- The Defence Intelligence Organisation (assessment and some collection);
- Elements of The Department of Foreign Affairs & Trade (collection and assessment); and
- The Australian Secret Intelligence Service (collection); and

Like the other members of this community, policy oversight is exercised by the Security Committee of Cabinet (SCC) in respect of targets, priorities, activities, organisational requirements, broad allocation of resources, performance and co-ordination, and the inter-relationships between agencies.

A committee of officials known as the Secretaries Committee on Intelligence and Security (SCIS) oversees DSD's activities and functions as the primary advisory body to the SCC. The Secretary, Department of Defence, and the Chief of the Defence Force are members of that committee. Director DSD furnishes to the Secretary and CDF an annual report which includes an account of the performance of DSD in relation to its functions as described above.

1: One of DSD's former directors was in the habit of reading LeCarre novels while awaiting his turn to brief the Security Committee of Cabinet. As a senior minister passed by on his way to the Cabinet Room, he remarked, "What's this George, still trying to memorise your lines?"
Tasking Arrangements: DSD Clientele

DSD is tasked through a concerted national mechanism and also by individual clients. In relation to Sigint tasking, the primary source is the Cabinet-endorsed National Foreign Intelligence Assessment Priorities: a set of general intelligence requirements put into effect through The National Intelligence Committee. This committee serves to bring together the various policy departments and the assessment agencies, notably ONA. A sub-committee, known as the National Intelligence Collection Requirements Committee, translates the needs of intelligence users into specific tasking requirements and priorities for the guidance of DSD and the other collection agencies.

In addition to this national machinery, individual users of operational Sigint, notably the major commands but also other elements of the ADF requiring direct Sigint support, make their requirements known to DSD through regular bi-lateral contact. For example, the Maritime Intelligence Centre and Air Headquarters are two of DSD’s more active customers, requiring a wide range of Sigint support.

In all, DSD provides Sigint to about 25 different Australian departments and agencies, and a varying number of ADF elements depending on strategic and operational circumstances.

DSD provides an Infosec service to a somewhat larger number of clients, including virtually all Commonwealth departments and several agencies and statutory authorities. It also supports those sections of Australian industry involved in the design and development of cryptographic products and trusted computer systems for government use, sponsors the Australian industrial tempest program, and is responsible for evaluating cryptographic and computer security products.

Virtually all of the ADF’s cryptographic equipment and devices are evaluated and their procurement or manufacture sponsored by DSD. DSD provides the ADF with cryptographic advice, and supplies keying material to commands and units at all levels.

The DSD Culture

DSD is a multi-cultural organisation, and not only in the sense that it adheres to anti-discriminatory EEO practices. It is staffed with a mixture of civilian and service personnel and at present the civilian/service ratio is 6/4. Its civilian Director, Martin Brady, is supported by a one-star officer, Commodore Kim Pitt RAN, who is the senior military officer in DSD and an Assistant Director. ADF members are spread throughout the organisation, and handle the bulk of DSD’s Sigint collection operations. Many of DSD’s longer-serving civilian members are ex-service.

Civilian/service relationships, though occasionally troubled at the policy and planning level in the past, are now generally harmonious; indeed they always have been at the coal face. This is partly due to the professional attitudes which are generated when two culturally dissimilar groups work together to achieve shared objectives.

Multi-culturalism is also evident in the wide variety of skills and background experience required of the DSD workforce. DSD is populated by mathematicians, linguists, radio operators, accountants, technical officers and engineers, computer specialists, administrators, reporters and analysts of various types, and a long list of other workers, both specialist and generalist.

DSD’s international relationships also provide cultural diversity which adds variety and experience to the lives of DSD staff members.

2: One of DSD’s traditions is a Christmas door decoration competition in which the prizes are donated by allied organisations. First prize last year was a bottle of Cloudy Bay Sauvignon Blanc; third prize was one dozen of the best New Zealand reds.

Despite this cultural diversity, DSD has developed a unique corporate culture of its own. It is an organisation where inter-discipline networking is vital and where the constant interaction between functional elements working to strict deadlines fosters an innovative approach to operational tasks and a somewhat idiosyncratic management style.

Why is Sigint Important?

The Defence White Paper of 1987 stated, at paragraph 4.2:

"A high level of capability in strategic intelligence is fundamental. This allows us to review developments in the defence capabilities and political positions of other countries and to monitor them for changes that could affect our security. Our intelligence priorities focus on those potential changes that affect us directly. We must also, however, be able to assess developments beyond our region of primary strategic interest."
The importance of intelligence in providing timely warning of emerging threats, activities or attitudes affecting Australian interests was further developed in the paper, *Australia's Strategic Planning in the 1990s* which pointed out that if we are to have confidence in our ability to spot the emergence of threats to our security, it will be necessary to direct adequate effort to the detection and evaluation of warning signs. The recently published "Strategic Review 1993" affirms that intelligence monitoring and analysis play a key role in assessing warning time for major conflict.

Sigint is important because intelligence is important. The information provided by DSD to Defence and other policy areas has played a significant part in keeping the Government informed of developments outside Australia's borders and in monitoring crisis points relevant to Australia's interests.

Sigint is the most prolific and most comprehensive of the Government's secret sources, and is a unique source in terms of its ability to provide timely, detailed and authoritative information.

Sigint's value is not confined to strategic warning. It is also a powerful force multiplier and its value in this context has been amply demonstrated in virtually all the conflicts and military operations involving Australian forces since the Second World War. Several writers have detailed the exploits of cryptanalysts in that conflict, none more convincing than those contributing to a new book, *Codebreakers: The Inside Story of Bletchley Park* edited by S.H. Hindsley and Allan Stripp and published by the Oxford University Press in 1993.

In more recent times, DSD and EW elements of the ADF, working together, have provided vital operational or tactical intelligence to ADF units involved in regional conflicts such as the Gulf War and in supporting military activities more generally. ADF mobiles and ground force units operating outside Australia are regular recipients of a direct Sigint advisory warning service coordinated by the Australian Sigint Operations Centre, an element of DSD which functions on a 24-hour, 7-day week basis.

3. Sigint is not always first with the news. And this was illustrated most graphically during the Gulf War when senior Defence officials regularly traded information from CNN with their intelligence staffs. As the conflict escalated, it was quite a coup to be the first to wake a very senior official in the dead of night with the advice "switch on your television set".

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**Why is Infosec Important?**

It should not be necessary to emphasise the need to protect information concerning the capabilities and plans of the ADF or the Government's policies and attitudes to key questions concerning the security of the nation. Yet in some circles one hears the view that there is not much about Australia that is worth protecting and indeed nothing much that a foreign power would bother collecting. A few academics and journalists appear to believe that by publishing sensitive information obtained overtly or by surreptitious means they are somehow doing the public a service. The writer believes they are doing no-one a service but themselves, and those foreign governments which might benefit from the information so provided.

There is little DSD can do to prevent the disclosure of sensitive defence and security information through deliberate leaks. DSD's job is to provide advice and assistance to departments and agencies seeking to protect their confidential communications and the information in their computer systems. The professional skills, techniques and equipment available to DSD in this role are as advanced as any in the world, and DSD has a great deal of confidence in its ability to meet the needs of its clients, provided that its advice is heeded.

The threat to Government communications and computer systems, carried out in conjunction with ASIO, has been assessed as very real. There is amply evidence of attempts by foreign intelligence agents to exploit electronic information being transmitted or stored by Australian Government departments and agencies.

The threat is not confined to foreign espionage. Over the past year two major hacking attacks and a virus attack against Government computer systems were detected, and it is not unreasonable to expect that the incidence of these attempted penetrations will increase. DSD will continue to work closely with its clients in attempting to forestall these activities.

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**The Past**

The genesis of DSD lies in Australian involvement in two joint Sigint organisations formed during WWII to support US and Australian forces in the Pacific theatre: Central Bureau in Brisbane and the Fleet Radio Unit (FRUMEL) in Melbourne. However DSD,
originally known as the Defence Signals Bureau, did not emerge as an independent organisation until 1947, and initially occupied somewhat primitive accommodation in temporary WWII huts in Albert Park Barracks, Melbourne.

4. So oppressive was the atmosphere in the fibro huts that the DSB management was obliged to set up a “heat committee” which had the power to declare a stand-down if the temperature exceeded 100 degrees fahrenheit. However the system broke down when it was discovered that a group of analysts had posted a cockatoo to watch for the appearance of the committee and to switch on all the radiators at the crucial time.

The early years were characterised by the development of technical and analytical skills, setting up collection operations at a number of intercept sites, the establishment of working relationships with the ADF and client departments, and consolidating liaison arrangements with Australia’s intelligence allies. A professional relationship was also formed during this period with the emerging Defence Science Organisation.

The 1950s saw DSB move into the computer age with the acquisition of its first high speed machine and progressive development of its cryptanalytic capability. Planning for new intercept sites commenced in the 1960s and culminated in the opening of a major new station in the early 70s.

In August 1974 the Prime Minister announced the appointment of a Royal Commissioner, Mr Justice Hope, to inquire into the Australian intelligence and security agencies, and DSD, along with the other agencies, participated fully in this inquiry. Hope J’s findings were presented in April 1977. Inter alia, they included recommendations dealing with the control and management of intelligence activities and the creation of machinery which was to prove beneficial to the tasking and coordination of the collection agencies. Hope J reaffirmed the national importance of DSD’s functions, and recommended that DSD remain in Defence as an “outrider” organisation with considerably enhanced administrative autonomy.

After three decades of sub-standard accommodation, DSD was relocated to a new, purpose-designed building in Victoria Barracks Melbourne in 1978/79, coinciding with the acquisition of much more powerful, interactive central computing and a range of modern, high-technology interception facilities.

5. Shortly before the new building was opened, Sir Arthur Tange, then Secretary for Defence, inspected the new office accommodation accompanied by DSD’s chief administrator, a man noted for his competence but not for his modesty. On entering the office with by far the best view over Port Phillip, the Secretary remarked, “I expect this is to be your office George”. The reply was “Who else, Secretary”.

The 1980s was a period of further rapid development, assisted by the support provided by a second Royal Commission conducted in 1993/94. It has been rightly claimed that by the mid-1980s DSD had achieved a level of maturity and self-reliance which justified the confidence the Government was by that time placing on its products and the level of resources devoted to producing them.

The Present

The two largest projects ever undertaken by DSD were completed only recently. One was the move of DSD headquarters from Melbourne to new and refurbished buildings in Canberra, the last stage of which was completed in early 1993; the second was the establishment of a major new station at Geraldton WA which was commissioned on time and within budget in late 1993. The early 1990s also saw the introduction of more sophisticated collection and data handling equipment and the acquisition of more powerful computers.

DSD’s arrival in Canberra, after many years of relative isolation in Melbourne, marked the commencement of a new era in relationships with its primary clients. Key elements of DSD’s Strategic Plan deal with the need to be recognised by its customers as providing timely, relevant and accurate intelligence and to further improve the level of support provided to the ADF. These objectives are equally valid for Sigint and Infosec. DSD’s presence in Canberra has enabled its officers to provide on-the-spot inputs to the decision-making process in Defence and other areas of Government, and to respond more rapidly and effectively to changing requirements for intelligence.

6. It has been noted around town that DSD’s customer relations people often travel in pairs, each clad in a dark suit and carrying a thin brief case. After waiting patiently outside the entrance to one department’s high-security area, the two DSD proselytisers were greeted by a rat-like face half hidden by a partly opened door. “We already gave” said the face.
The view of the future for DSD in 1994 is no less daunting than it was in 1954, 1964, 1974 or 1984. All five decades have been marked by the emergence of Cassandra-like figures forecasting the decline of Sigint as an intelligence source. The doomsters point to the march of progress in cryptography and the increasingly diversified and complex communications systems which face a Sigint agency. A different set of doomsters point to the growing sophistication of foreign Sigint agencies as evidence that Australian communications are under threat.

The Cassandras are of course quite right; in the business of intelligence gathering, a smug and static organisation which rests on its laurels will very quickly become overwhelmed by change. But what both sets of doomsters neglect to recognise is that the march of progress has not overwhelmed DSD and is unlikely to do so while the organisation strives to maintain a technological edge. Maintaining the edge will largely depend on a group of highly qualified and energetic people who see the future as a challenge and who continue to see DSD's work as a vital part of the nation's security.

Mr Barnes joined the RAN in 1951. His seven years in the Navy were spent mainly in the Sigint/EW Branch and included duty in the Korean War theatre.

Mr Barnes joined DSD in 1958 and has variously worked as an intelligence analyst, reporter, planner and senior manager. He has had three tours overseas: in Hong Kong (1961-62), Washington (1966-69) and Great Britain (1977-79). In 1976 he was seconded to the Royal Commission into Intelligence and Security as the DSD liaison officer. He was appointed Assistant Director Plans and Programmes in 1981 and then promoted to Assistant Director Production in October 1982. In January 1987 he was promoted to Director of Operations and upon DSD's relocation to Canberra he became Deputy Director. He is now attached to the Defence Staff in London.

In 1992 he was awarded a Senior Executive Service Fellowship and spent 3 months overseas writing a thesis on "The Role of Intelligence in the Post Cold War World".
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ON THE WINGS OF CHANGE
Keeping up with a Rapidly-Changing World: The Need for Intelligence Agencies to Adapt

By Major Stephen M. Martin, Australian Intelligence Corps

The key features of the post-Cold War period all add up to a significant challenge for Western democracies: how to cope with a constantly-changing array of possible crises, coupled with a reduction in warning time and an increase in the time required to pre-empt, or react to, an emerging crisis. The corresponding challenge for Western national intelligence agencies will be to keep pace with the shifting priorities brought about by this new state of global disorder.

Setting the Scene: Characteristics of the New Global Balance

The collapse of the European Communist regimes and the dissolution of the Soviet Union marked the beginning of an irreversible change in global military and political affairs. Descriptive terms such as “multipolar world” and “new world order” abound; while not inaccurate, they are not much use from an analytical point of view. In order to be useful they must be defined more precisely.

What are the characteristics of this new world which make it different from the one we grew to understand between the 1950s and 1980s? What are the key differences in the global environment which will provide challenges to Western intelligence agencies during the latter 1990s? There appear to be five such characteristics: a proliferation of weaponry, the rapid transfer of technology, uncertainty about the alliances of many developing nations, a reduction in the military forces of Western democracies, and the desire of the United States to substantially relieve itself of the global security burden.

The first characteristic of the new order, or disorder, is the plethora of advanced weaponry and military equipment becoming available throughout the developing world and originating from a variety of sources. One major source is the former Soviet republics. Although many armament factories are being retooled for non-military production, Russia in particular is likely to retain an export capacity for many years. Indeed, the Russian Government recently stated its intention to reinvigorate its arms export industry, going as far as to create a new bank dedicated to financing arms manufacture and export ventures.

Some developing countries with industrial capacity will also be proliferators. Of particular concern is North Korea. Pyongyang is finding it increasingly difficult to feed its population and has little to offer the world by way of exports except for military hardware. North Korea is likely to have few scruples about whom it exports to and the oil-rich pariah states, particularly Iran, Iraq and Libya, are likely markets.

Western nations will also continue to be major contributors to arms buildups in the developing world. Western arms manufacturers seeking to maintain or increase market shares are finding themselves confronted with new competitors from Asia and the former Eastern Bloc. Greater incentives for purchases are being offered. An instance is the recent sale by the US to Thailand of 30 A-7 Corsair aircraft at an extremely cheap price, as an inducement for a helicopter contract for which Russia and France were also competing. The big winner in this case was, of course, Thailand. Developing countries are learning that they can play one potential supplier off against another in order to receive more hardware for their money. Malaysia’s recent fighter aircraft negotiations is an example.

Before the demise of the Soviet Union there was a Ten-Year Rule which postulated that once a state decided to manufacture nuclear arms, it would take at least a decade to attain its objective. The Rule proved to be quite accurate, and generally permitted the West to effectively check, or at least monitor, the progress of program developments.

Now, the Ten-Year Rule does not apply. The disintegration of the Soviet Union left the new states of Ukraine and Kazakhstan in the possession of not just missiles, but the potential technology to develop and manufacture them. Such technology could conceivably be sold to another party willing to pay for it and capable of conducting reverse-engineering. A similar disintegration in China during the coming years is not beyond the bounds of possibility, and could again leave embryonic republics in possession of equipment and, more importantly, technology.

Nuclear technology transfer can also be accelerated by a shift of allegiance and the new ability of developing countries to foster relations with, and buy arms
from, virtually any country without attracting retribution or sanctions. For example, improved relations between Pakistan and China resulted in a quickening in the Pakistani nuclear program. (Though in this instance the Pressler Amendment imposed by the US has retarded some of Pakistan's non-nuclear weapons programs. It is questionable if any Pressler-style sanctions would be effective in future, given the availability of sophisticated weapons and technology from alternate sources).

Technology transfer is not limited to nuclear weapons. The technology to produce non-nuclear weapons of mass destruction, such as chemical and biological weapons, and delivery systems such as ballistic missiles, exists in many developing countries. Transfer of such technology between nations may be difficult to detect. In cases of dual-use technology, concealment may not even be necessary, and new military capabilities may be acquired by a state under the guise of legitimate commercial transactions.

Intelligence analysts have always been faced with the difficulty of understanding and anticipating intent. Accurate assessment of capability and readiness is of limited use without an understanding of intent. Such understanding will be more difficult in the 1990s than in the past, as newly-formed republics and non-aligned states seek to gauge the nature of the world before forging alliances. Significant shifts in alliance have occurred in the recent past, the most notable being Iran's shift from being a firm US ally to a fundamentalist state hostile to Western values and interests. Alliance uncertainty exists in key countries in Africa and the Middle East and in the new republics of Eastern Europe and the former Soviet Union. It would certainly occur should any parts of China manage to break away from Beijing's control.

Alliance will be most uncertain, and intent most difficult to predict, in countries where government is fragile or in the hands of unpredictable individuals. Who would like to predict the likely alliances of any republics which may emerge from the ashes of Yugoslavia? Who are the likely future alliances of the former Soviet central Asian states?

The breakup of the Soviet Union has led to a reduction and realignment of the military forces of the US and most NATO countries. Economic hardship and a reappraisal of threats have led to defence budget cuts in Western-oriented countries elsewhere. The drawdowns in forces not only mean fewer assets available for deployment; reductions in transport fleets and logistic units will also lead to an increase in the time required to get large forces overseas. This drawdown of forces has not been mirrored in many of the world's trouble spots. Indeed, the increase in available cheap weaponry, together with the removal of the Soviet Union as a restraining force, is likely to lead to an expansion of military power in many developing countries.

The US Secretary of Defense's 1993 Bottom-Up Review of defence force structure recognises that threats to US interests are likely to originate from weapons proliferation, regional hegemony, dangers to democracy and economic threats, rather than any territorial invasion of Western nations. The Review acknowledges that threats could arise in a number of parts of the world simultaneously, and that the capacity of the US to react effectively to simultaneous large-scale threats is limited. The US understands its force-projection limitations. So, no doubt, do potential adversaries around the globe.

In fact, the Bush Administration has stated its desire to share the burden of global security more equally amongst allies; however, allied countries are facing the same economic hardships as the US, and are also reducing their military forces. The concept of burden sharing will no doubt live on and allies, particularly in Europe and the Asia-Pacific, will have no choice but to accept more responsibility for regional security as garrisoned US forces are withdrawn. But Washington understands its role as sole remaining super-power, and realises that it will be unable to totally withdraw from any area of potential threat.

The United Nations has emerged as a forum in which to combine the efforts of nations in order to deal with trouble. Though its capabilities are limited, and there have been some embarrassing failures, the UN is attempting to create a capacity to deploy credible, disciplined military forces throughout the world at short notice. The UN will, however, remain dependent on the US whenever large numbers of well-trained combat troops are required, and will probably be unable to intervene anywhere without the concurrence of US foreign policy.

The Challenge for Policy and Plans: Reduction in Warning Time

National intelligence agencies are required to keep in tune with the needs of policy makers and military planners, and to understand the pressures under which these customers are operating. The emerging world order is presenting new challenges for Western governments, brought about by reduced warning time coupled with a diminished ability to pre-empt, or react promptly to, emerging situations.
Warning time will be reduced as the world fragments and realigns. There will be more possible contingencies than ever in the past, and these new factors of hostile proliferators, emerging nuclear states, shifting alliances and general increased disorder are likely to lead to policy makers being confronted with rapidly-developing crises. Indicators of changes in readiness and capability may remain hidden as potential antagonists acquire more sophisticated communications and counter-surveillance technology.

This reduction in warning time will be accompanied by a decrease in the reaction time available to planners as military forces shrink. Planners will need to be more flexible than ever before and be prepared for the increasing number of potential contingencies. Deterrence strategies may not work, as antagonists come to understand how stretched Western military forces have become. Planners will need more options for more contingencies as time goes by.

The problem of evaluating intent will continue to plague governments. Western nations will be unable to afford to react to emerging situations on predisposition alone. This problem was illustrated prior to the Iraqi invasion of Kuwait in August 1990. Analysts had detected the change in Iraqi posture and readiness, but policy makers were not convinced that the intent to invade existed.

The pros and cons of involvement, and the possibilities of success, will have to be weighed more objectively than was perhaps the case with Somalia. For instance the problems in Somalia were thrust upon the world consciousness by a consortium of philanthropic organisations supported by media networks eager to shock. Throughout the buildup to the multinational intervention, there was little mention of other sub-Saharan African countries which were experiencing the same problems as Somalia: prolonged, intense famine and lawless brutality brought about by a collapse of government and economy and exacerbated by weather patterns and a free availability of weaponry. Only as the Somalia experiment fails is the attention of the world being attracted to Sudan, Burundi and Angola.

Western governments reacted to Somalia in a Pavlovian manner, falling over each other in the UN to be first to offer a solution. Intelligence agencies from Warsaw to Wellington were tasked with providing their governments with as much information as possible on this obscure locality. The Western world wanted to bring peace to Somalia, to give it fair government and bring it into the brotherhood of nations. Nobody believed it could be done overnight, but few doubted that it could be done.

The intervention in Somalia now looks like being tragically unsuccessful. The most valuable lesson Western governments can learn from the experiment is that they expected too much from the outset. There are parts of the developing world which do not aspire to democracy, or even to stability, as we understand it. In some countries war is not seen as a catastrophe, and there is no trend towards moderation and constraint in the Western sense. There will be other occasions when a particular part of the world will be picked out for media attention, and as heart-rending as the television pictures may be, the West will be unable to afford to rush to the assistance of all.

All Western agencies devote a significant proportion of their resources to the analysis and dissemination of current intelligence — those issues which are, or will soon be, of immediate interest to customers. This effect is a necessary part of an agency’s role as a customer-oriented organisation.

This analysis of current issues can be likened to travelling through a foreign land on a train. One gets to see the hills and the trees, the towns and the landmarks, and gets a reasonable feel for what is out there, and what is just ahead. Unfortunately, the passenger is only seeing a fraction of what is available. He does not see what is over the horizon or within the forest which he sees in passing. Furthermore, he is getting the same view as everyone else on the train.

Many customers of intelligence agencies are satisfied with such a narrow view. That is, until the time something unusual appears on the track ahead, or when the customer discovers that a landmark he has been looking forward to seeing has been removed. At this point he wants to know why he was not warned of the changes.

Agencies need to get off the train regularly, scout ahead, and look over the horizon. The snapshots provided by current intelligence will not always be sufficient to provide the timely warning of unexpected events and developments which policy makers need. Agencies must be prepared to widen their scope of interest beyond that which is topical. Such a widening
of coverage is difficult in times of shrinking resources within agencies and increased uncertainty around the world, but is a challenge which must be met.

Moreover, as resources are reduced and possible contingencies increase in number, agencies are being challenged to "do more with less". Analysts who have been comfortable studying narrow fields for many years may find themselves responsible for new aspects of their areas of study, or even reassigned to less-familiar areas. All analysts will need to become aware of political, social and ethnic aspects. This is likely to be traumatic for many individuals and teams, especially when combined with other upheavals, such as the requirement to learn new technology.

Agencies will need to put a lot of effort into personnel selection and development, in order to foster analysts with a broad range of knowledge and ideas and who are able to switch priorities at short notice, without neglecting the core of specialists necessary to maintain data bases and institutional knowledge.

Many workers over the age of 30 today find themselves in a kind of technology gap. That is, they were educated with pens and paper, but now find themselves confronted with electronic communications and computers, the workings and potential applications of which most only partly understand. The problems associated with this dysfunction will continue to be felt in intelligence agencies as much as in any other workplace. In many cases, employees must be forced to use the available technology in order to improve their confidence and productivity. The challenge to harness technology is made more difficult by the speed with which new technology is developing.

Time spent learning new applications is time not spent analysing problems. A balance between education time and production time must be maintained.

The electronic media provides another challenge. The Gulf War of 1990-91 saw the advent of television as a serious problem for US military intelligence. Non-stop CNN coverage of the war was beamed into every US headquarters. The electronic media was supplying situation updates more quickly than Intelligence could hope to provide. The Pentagon realised that the clock could not be winded back: that it would have to do better than the news networks or risk its messages being ignored. The result was the development of a Defence Intelligence Network capable of broadcasting video briefings via a secure circuit to military and diplomatic headquarters worldwide. Similar, smaller-scale systems have since been established by other governments. Video dissemination is rivalling the written word, and will be an increasingly-important medium for the communication of urgent, warning-type intelligence in coming years.

National intelligence agencies are likely to encounter a number of obstacles in keeping pace with the changing world. Not the least of these will be getting messages through to customers who are receiving information from many different sources. Policy makers, are busy, preoccupied and have preconceptions. They are likely to have had privileged discussions on matters of topical interest, and be briefed regularly by non-intelligence sources. Current intelligence assessments may be viewed cynically. Such resistance to the message on the part of users will make it all the more difficult to effectively communicate a warning message on a less-topical issue.

Another problem is the largely reactive nature of the intelligence community. The Western intelligence community surges once it is onto a problem, but much effort may be saved if problems can be anticipated before they arise. It will be impossible to plan for all possible contingencies, but a repeat of the world-wide scramble to obtain intelligence of Somalia may be averted by well-placed liaison within the UN, and improved intelligence-sharing arrangements involving as many allied governments as possible.

A third difficulty will be to overcome mindset within the intelligence community. At the macro level, agencies must be prepared to challenge their preconceptions, and constantly review assessments, even if it means having to admit that past assessments on a subject may have been wrong. If an intelligence agency cannot overcome its own mindset, what hope does it have of altering the preconceptions of politicians and generals? At the micro level, agencies must encourage analysts to think laterally and independently and to avoid the effects of groupthink on assessments of capability and readiness. Only objective analysis of indicators will achieve this.

A final major difficulty will be to pursue the analysis of intent. Petty tyrants and dictators will have increased freedom to act in a fragmenting world with reduced superpower presence. Analysis of biographical intelligence will be paramount in coming to grips with intent, as will well-placed human intelligence sources. Planners' unwillingness to react solely on an adversary's predisposition has already been discussed. If Saddam Hussein's intention to invade Kuwait had been known and effectively communicated to policy makers, the invasion may have been prevented.

There can be no simple list of lessons which will enable national intelligence agencies to cope with the
complex and exciting world of the 1990s. There are, however, some principles which agencies could do well to follow.

Treat warning issues with at least as much priority as current issues. This will require a break from convention for most. Agencies will need to resist the customer appetite for assessments on those issues receiving press coverage, and instead force-feed customers with analysis of emerging issues — those within the peripheral vision of the agency but not yet on the desk of the policy maker.

Understand customers’ needs better than they do. Customers will not always tell an agency when they require assessment on an emerging issue. Such customer demand may occur only as an issue becomes topical, and perhaps when it is too late to take preventative action. It will be up to agencies to initiate priorities in anticipation of likely customer needs.

Understand customers’ constraints, as policymakers may not always be able to react to warning messages from the intelligence community. The policy maker may be under an executive order not to react for political or diplomatic reasons, or reaction to a particular warning may be perceived as too expensive given the likelihood of the predicted events or developments occurring.

Continually evaluate conceptions. Conceptions drive the intelligence process, providing collection and analysis priorities. If the initial conceptions are false, then effort will be wasted. In the constantly-changing world of the near future, in which alliances shift and capabilities improve rapidly, the conception of intelligence agencies must be kept flexible, and able to be altered as the environment alters.

Understand the nature of conflict. The argument that some parts of the world are unlikely to embrace democracy and stability in the Western sense has already been discussed, together with the need to come to a rational understanding of such issues. An awareness of the nature of conflict, be it economics, nationalism, ethnicity, religion or a combination of several, must be present at all levels of an intelligence organisation, in order to help overcome analytical bias towards a Western interpretation of the situation.

Demystify the Intelligence process. National strategic intelligence organisations, more than ever before, cannot afford to work in isolation. The requirement to cover more possible contingencies with shrinking resources means that outside assistance will frequently be needed. US agencies have been contracting research and data base functions to public and private bodies for many years now, and this trend is likely to spread. Only with a widespread understanding of national intelligence processes and priorities can such contracting be successful. Additionally, intelligence agencies cannot afford not to have access to, and the cooperation of, the world of academia, and its breadth and depth of expertise on areas of the world which might rapidly emerge as issues of intelligence interest.

RECOMMENDED READING


Thies, Wallace J. “Intelligence and Warning After the Cold War: Will the New World Order be Less Dangerous?”, *Catholic University of America Seminar Paper, 1993.*


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Does the Teaching of Warfare by Use of Principles of War Lead to Stereotypical Answers?

By Major R.J. Easton, RNZAOC.

"If men make war in slavish obedience to rules, they will fail."
— Ulysses S. Grant

Introduction

On the eve of the armistice and collapse of Germany at the conclusion of WW1, Marshal Foch, the Allied Supreme Commander, saw fit to republish his book The Principles of War, which he had written in 1903 as a Lieutenant Colonel at the French Staff College. In spite of the innovations of 1914-18 — the increased size of armies, trench warfare, aircraft, tanks and gas — in his opinion the fundamental principles governing war still remained. He said:

These are we see conditions for the art of war so changed from the conditions of the past that it would seem that the art itself must be entirely changed. How then can precise rules for its conduct be found in a work published in 1903? Yet the fundamental truths which govern this art remain immutable ... It is therefore still necessary to establish the principles of war.

In making these comments Foch refuted the belief that the formulae of past wars is dead. Foch’s 1918 view is perpetuated in the Australian Army’s current doctrine, which lists the principles of war as practical guides and states that they serve as warning that “disregard of them involves risk and has often brought failure”. However, throughout the period over which the principles have evolved, there have been nations and theorists who have doubted the value of the principles of war.

There is a view in some circles that the teaching of warfare, based upon the principles of war, leads to stereotypical answers, in order to generate some constructive debate on the utility of the principles of war for the study of warfare in the Australian Army. A brief examination of the origins and current status of the principles of war, will be followed by an analysis of their meaning. This will be followed by an analysis of how you should use the principles of war in the teaching of warfare in order to avoid stereotypical answers.

The Principles of War — Evolution and Meaning?

So how have the principles been evolved? There are ten listed in official doctrine today. The earliest writings on the military principles and study of warfare data back to 500 BC. Sun Tzu in the book Art of War, had prescribed thirteen maxims and precepts to guide rulers on the conduct of war, during the period of the Warring States, in Chinese history. Many of Sun Tzu’s principles of war are still widely quoted today. In the West, documented principles of war are found in the writings of Machiavelli (1521), Henry, Duke of Rohan (1644), Marquise de Silva (1778) and Henry Lloyd (1778), amongst others.

Many of the modern concepts of the principles of war and warfare in general originated during the Napoleonic period. Napoleon’s military successes provided valuable lessons for understanding military operations. Napoleon attributed his successes to certain principles which he always followed. 115
Maxims have been culled from Napoleon's writing. For Napoleon, the battlefield was the classroom in which he taught his generals. That the Principles of War emerged from the Napoleonic era, is attributed to two military thinkers and contemporaries of the period, Jomini and Clausewitz.

Before World War I, there was a general belief in the existence of principles of war, but there was no generally accepted universal principles. Military literature discussed the principles in the form of general truth or as considerations necessary for the understanding of war. The British Army Field Service Regulations, 1911, for example stated “the fundamental principles of war are neither very numerous nor in themselves very abstruse.” This general descriptive view became more focused after World War I.

The desire to avoid the blunders made in WWI, provided impetus to discover and define the principles of war. J.F.C. Fuller argued vehemently on the validity of his principles which were later adopted and codified by Great Britain after World War I. The final official version appeared in the 1924 edition of the Field Service Regulations.1

WWII again provided the basis for analysing the validity of these principles. When Montgomery was appointed Chief of the Imperial General Staff, after WWII he initiated a revision of the official list of the principles, adding morale and administration to list codified in 1924. The ten principles resulting from Montgomery’s review have remained unchanged to this day in the British Army. They are similar to the ten principles listed in current Australian doctrine. The current version of the US principles of war also closely resembles Fuller’s original list.

Today most of the world’s armed forces have stated what they consider to be the principles of war. Although the lists differ widely and changes are made to them, many remain constant.2 European armies, including the Soviets, derive their principles from Jomini’s and Clausewitz’s interpretation of the Napoleonic era. Many Asian countries derive their principles from Sun Tzu’s The Art of War.

Generally there are two schools of thought on the principles of war. The first claims that to be universally applicable, and “hence safe to follow” they must be derived from cause and effect relations. Nazareth argues that without causal relationships the doctrine amounts to this:

“If you observe the ‘principles’ of war in the right manner, you will be successful in battle; but what is the right manner we cannot tell you and for this you must rely on your own judgement. However, when it is all over, we can clearly tell you how your application of the ‘principles’ lead to success or failure.” Therefore, far from being guides to conduct, the “principles” are guides after conduct, dispensing the wisdom of hindsight.3

Lieutenant Colonel D.J. MacBride, of the Australian Army, set about his study of the principles of war “with the hope of arousing the reader to a critical, constructive and fresh study.”4 MacBride also believed that “The science of war and the principles governing its management must be immutable...”

The second school of thought on the principles argues that the claim of immutability cannot be accepted literally. The degree of difference throughout history, and currently, between both theorists and nations, on what constitutes a principle is evidence that war is not an exact science and therefore the principles of war are not immutable or causal. Only a science has immutable principles, derived from cause and effect.

However, particularly when listed, the principles of war have often been regarded as unalterable and true for all times, the Encyclopaedia Britannica notes “The individual authors of lists have almost uniformly claimed the principles to be immutable.” In the past, Commanders have chosen to regard them as immutable, otherwise they serve no value.5 It is clear from this that there has and probably always will be debate over what and what is not a principle of war. The Encyclopaedia Britannica, records:

The debate over principles was renewed with the coming of the atomic era. Some theorists argued that the new weapons had destroyed whatever value the principles once had; others contended that the principles were as valid as ever, even more so. To some extent this was a debate over semantics. Defenders pointed out that each age must make it’s own applications of the “fundamental truths” of strategy. Opponents argued that there can be no set rules for the art; the so-called principles must by no means be interpreted as pat formulas for victory to be followed blindly and rigidly; the only sound guide in war and strategy is flexibility.6

Turning to the dictionary provides a focus for discussion on this debate. The dictionary says that a principle is a fundamental truth, it does not say that it will be rigidly observed. Foch recognised the danger in thinking of principles as immutable and thereafter applying them rigidly. He noted that the principle of offensive action was used to justify the senseless offensive battles of WWI, in his memoirs he states: the doctrine of the offensive tended to impose an invariable rule leading too often to tactics that were blind and brutal and for that reason, dangerous.
It also produced a strategy that was bare and uniform, easily sterile, unproductive of results and costly.\(^{18}\)

Further the Oxford Dictionary defines “Principle” as “a fundamental truth as a basis for reasoning” or alternatively, “a general law used as a guide to action”.\(^{19}\) Some of the principles listed do not fit these definitions, and are therefore not principles in the strict sense of the word.

Several of the principles are in fact more strictly methods by which certain results can be achieved. Lord Wavell has called them “methods by which strategy is successfully applied”, and General Rowan Robinson “modes of action that have normally proved successful”. Several are broad and sweeping, some are self evident, and some almost contradictory. “Offensive action”, for example is neither a general law nor a fundamental truth; it is a method, or way of accomplishing the object. “Flexibility” might be described a characteristic.\(^{20}\)

There is some risk that students may become involved in a semantic argument over what should or should not be included as a principle of war. As Brigadier Macklin warned:

*This makes the study of military history both boring and useless, or even dangerous, for in trying to jam all the lessons into the framework or some formal list of principles the student is all too apt to miss the lessons that are really there.*\(^{21}\)

Many writers on the principles of war point out that this danger can be largely avoided if we follow Napoleons definition: “The principles of war are those that have guided the great commanders whose great deeds have been handed down to us by history.”\(^{22}\) In making this statement, Napoleon and the numerous writers who have used this quote, recognise that history is a pot pouri of experience that has clearly shown that there is no standard way to fight a war. Further history shows a variety of situations and different ways in which the principles have been applied, as Col Keogh stated:

*We know that throughout nature, similar causes always produce similar effects. If we can discover in the military sphere some recurring patterns we will have learned much from experience. We will also be struck by the frequency with which the rules on principles established by these recurring patterns are violated. And we will be struck by fallacious arguments put forward in support of each violation.*\(^{23}\)

The principles of war therefore arise out of an historical data base. The historical data base provides the validity, in respect to means and conditions of time and space prevailing in respective periods, for each of the principles. One thing certain in military history, is that changes in conditions and time will alter certain methods of applying these principles. In applying the principles of war then, they must not be separated from their historical database. To do so, is to effectively isolate them from their historical database, which inevitably results in stereotypical thinking.

**How Should We Use the Principles in Teaching Warfare and Avoid Stereotypical Answers?**

Having reviewed the evolution of the principles of war, highlighted their historical basis and alluded to how they should be used in teaching warfare if we are to avoid stereotypical answers, it is now important to demonstrate that it is the methods of application of the principles of war that are the key variables that may result in stereotypical answers, not the principles themselves. Both the principles and their application listed in official doctrine and any other text, can be readily memorised. However, to apply them judiciously in conditions different in means, time and space, requires a profound understanding and wide knowledge of their historical database. On this matter Clausewitz said:

*There is no doubt the conduct of war is very difficult, but the difficulty does not lie in the fact that learning and genius are required to understand the principles of war; a reasonably intelligent brain, which comes to the subject without prejudice and some elementary knowledge, can grasp them. There is no difficulty in applying these principles on the map and on paper, and it is no great achievement to draw up a good plan of operations. The whole difficulty consists in being true to the principles which we have established, when it comes to applying them in war.*\(^{24}\)

Foch believed the way to overcome this difficulty is to develop the “powers of analysis and of forming correct conclusions by an objective study of past experience, that is of history.”\(^{25}\) Both Clausewitz and Foch make it clear that a knowledge of past experience is not good enough. It is not the knowledge of the principles that is important, but the degree of intelligent use made of them, and the ability to apply them effectively. This will only be possible if one has made an intensive and objective study of the practices and methods of great military leaders of the past. The conditions of time and space existing during the period under study must be examined, to determine how their application of the principles would have
been affected by modern means and conditions. The methods of Gustavus Adolphus demonstrate this requirement:

He arrayed his infantry in six ranks, with intervals between files. The front rank aimed and fired, and then doubled to the rear through the intervals, there to begin the drill of reloading the muzzle-loading muskets. By the time the five succeeding ranks had done the same thing, the original front rank was ready to fire again. Fire was thus practically continuous. What Gustavus Adolphus had done was to increase the fire power of infantry. The detailed method by which he did it has no application to our equipment, but the fire power of infantry is just as important to us as it was to him, and the genius who can devise a new method of increasing it will contribute to the winning of some future battle.  

This is one of many examples that demonstrates that understanding and application of the principles is a "... process of reasoning... These principles are not learnt as one learns the multiplication tables. Their effective application is an intellectual process."  

Hence a systematic approach to the study of the principles of war is called for. The alternative approach to a systematic approach is "a combination of intuition and untrained memory, whereby attempts are made unsystematically to apply... to... problems... what experience one has acquired by practice or what one knows intuitively."  

In teaching warfare by use of principles, students are often advised to test their plans against a checklist of principles or basic considerations. This approach is, however, inherently non-systematic in nature. When lacking the wisdom of experience, which only comes from a detailed study of the past, the student unavoidably isolates the principles from their historical data base. At this point, reliance on intuition and an untrained memory replaces reasoning based on understanding and application.  

Brigadier Nazareth argues that the process of reasoning required to correctly study military history, is one that recognises causal relationships. He wrote:

If merely facts and not causes are studied, the knowledge of military history will be applied in a form of reasoning by analogy. This is a disastrous procedure because no two battles are fought in an identical manner, and the commander will be guided in his course of action by superficial similarities. Like a quack medical practitioner, he will be applying remedies to symptoms rather than treating causes. The course of his thinking will be as follows: "in a similar situation, at the battle of A. Julius Caesar acted in this manner this then is my course of action"  

This approach surely leads to stereotypical answers for it "restricts the scope of our inquiries from the very beginning" and "channels our thoughts along pre-determined lines, which is the thing to be avoided at all costs." A systematic application of knowledge is called for, and this is "an intellectual task — a task which calls for the use of powers of reasoning."  

Nazareth identifies such an approach in concluding his analogy:

But if his training is sound. The mental process of his reasoning would be as follows: The solution to this problem lies in one of the courses A, B, or C. At the battles of A under similar circumstances Julius Caesar used course A with this result. Bearing this in mind, how should the adoption of this course now affect this problem.  

The preceding analysis shows that the effective teaching of warfare by use of principles requires the training of student minds that are steeped in the wisdom of historical experience? But how do we cultivate such minds. The advice Napoleon gave his officers is as relevant today as it was when he wrote it. "Read and re-read," he said, "the campaigns of great commanders" should be studied, beginning with Alexander, Hannibal and Caesar, going on with Gustavus Adolphus, Turenne and Marlborough, and ending with Fredrick the Great.  

In this, he (Napoleon) was advising his officers to organise their study of war into three periods, taking first ancient war from Alexander to Hannibal, following it with the middle period from Gustavus Adolphus to Marlborough, and ending with the study of methods of great commanders nearest his own time, Fredrick the Great.  

Napoleon wanted his officers to learn:

First that certain broad general principles guided the action of all these masters of war, and next that the methods which they used in applying these principles varied with changes in means and in the conditions of time and space. His object was to help officers to prepare their minds to apply these principles when confronted by further changes in means and conditions.  

Failures as well as successes must be studied, to learn what happens when the principles of war are neglected or misapplied. On this matter, Hitler's many mistakes in WWII and Dr Norman Dixon's book On Psychology of Military Incompetence will repay careful study.  

It is clear that memorising facts is not enough. Comprehension and analysis of facts is required in order to grasp the concepts embodied in the principles of war and the general methods of applying them. Training minds for future war does not require a
study that spans from ancient times to the present. The span should be sufficient to give the student an understanding of means and conditions of time and space, to permit the student to apply them in a reasoned manner to means and conditions of modern war. It is difficult to see how anyone following this approach, one that should challenge, stimulate and develop thought processes on the art of war, could lead to stereotypical answers. It is equally clear that it is the methods of teaching warfare by use of principles that results in stereotypical answers, not the principles themselves.

**Conclusion**

The principles of war have evolved over centuries from the lessons of wars. They are not principles in the sense that they set forth causes and effects. Unlike the laws of science which deal with certain conditions and create certain results, none of the principles is immutable. Not all the principles are appropriate for every occasion and some are contradictory.

The principles are true for both small and large Armed Forces, and for the strategic to the tactical level of war. The unique differences in conditions between armed forces or the levels of war must be expressed in the way the principles are used, and in the order of priority in choosing which suit which conditions of time and space. For the strategist, they offer a set of questions that should be considered if military strategy is to best serve the national interest; for the tactician an operational framework.

From a practical perspective, the principles must be considered in relation to their data base. Most of the arguments supporting the premise that the teaching of warfare, by use of principles, leads to stereotypical answers that are based upon the semantic arguments about what is and what is not a principle of war. The scientific or purists approach of cause and effect versus the practical approach of what do these lessons, written in the blood of history, mean for us in future wars.

The making of sound plans and their bold execution requires mastery of the art of war and, as Maj Gen Maurice concluded in his book *British Strategy,* "The master of any art is he who adapts most skillfully, new methods to established principles". So the objective of a student of the art of war, is to learn to adapt new methods to established principles. If the teaching of warfare by use of principles follows this philosophy it will not, and cannot, lead to strategic or tactical solutions that are formalised, unchangeable and fixed in all details.

The principles of war provide guidelines for studying and thinking about war, for directing a war and learning lessons from a war. If used intelligently they can be used as a checklist for strategic and tactical planning. Commanders who are guided sensibly by them increase their chances of success, but no more than that. Success or failure depends on how well the principles have been applied or ignored.

In the final analysis, history is for guidance of the wise and strict adherence of fools. It is not the knowledge of the principles that is important, but the degree of intelligent use made of them, and the ability to apply them effectively. On this matter, The Wallet of Kai Lun, Ernest Bramah has some important advice:

> It is related... that a person of limited intelligence on being assured that he would certainly one day enjoy an adequate competence if he closely followed the habits of the thrifty bee. Spent the greater part of his life in anointing his thighs with the yellow powder which he laboriously collected from the flowers in the field... learn therefrom... that wisdom lies in an intelligent perception of great principles, and not slavish imitation of the details."

This though contains a message for students and teachers alike who confront principles in warfare, it's message has been the theme throughout this article and must be yours if you are to avoid faulty and rigid application of the principles of war, to the art of warfare. As professional officers, NCOs, and military trainers alike, we must all ask ourselves: How do our methods of teaching warfare by use of principles stand up to this challenge?

**NOTES**

10. For a comparison of the principles of other countries see:
b. Nazareth, op cit., p.98.
c. Starry, op cit., p.6.
18. Quoted in Nazareth, op cit., p.10.
20. Maurice, op cit., p.27.
22. Maurice, op cit., p.27.
24. Quoted in Maurice, Ibid., p.240.
25. Quoted in Maurice, Ibid., p.3.
26. Macklin, op cit., p.3.
28. Ibid. p.29.
31. Perry, op cit., p.27.
34. Loc cit.
35. Loc cit.
37. Starry, op cit., p.3.
38. Maurice, Loc cit.

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Major R.J. Easton is currently the New Zealand Exchange Officer posted to Admin Br LHQ. He is a graduate of OCS Portsea, the US Army Logistic Executive Development Course, and the Singapore Command and Staff College. In December 1993 he completed a Master of Defence Studies at Deakin University, and is currently undertaking an MBA at Macquarie University, Sydney.
Defence Acquisition: Public/Private Sector Comparisons and Other Reform Issues

By Paul Eamshaw, University of Canberra.

Introduction

One of the policy and managerial innovations introduced into the public sector in recent years has been to employ private sector practices. The adoption of the concept is perceived to result in increased public sector efficiency and effectiveness (and in more recent years — outcomes), through the operation of market forces and the introduction of managerialist reforms; such as devolution, greater individual accountability, the streamlining of processes, “value for money”, and flatter organisational structures. Inherent in this approach is the belief that the private sector utilises methods which are more efficient and effective than those of the public sector.

Both the public and private sectors acquire major capital equipment, whether it be a weapon system or mining plant. While there are also many strong similarities between major private and public sector acquisitions, there are also very subtle and important differences. It is these differences and the characteristics of defence acquisition that will determine the most appropriate managerial paradigm for effective acquisition reform within defence.

Public Versus Private Acquisition

There is little doubt that the benefits of innovative managerial programs based on many of the “best” private sector practices in Australia, particularly those contained within the Financial Management Improvement Program, have resulted in greater public sector efficiency, economy and productivity. Since the acquisition of major capital equipment by the Australian defence organisation has been severely criticised by parliamentary committees, the defence industry, and even those within the defence organisation who are in some way responsible for acquisition, substantial systemic improvement within the acquisition process utilising private sector practices should be possible. The analogy used most often to underpin this argument is that in the private sector, cost overruns and schedule slippages are not nearly as dramatic as those of major defence acquisitions.

There are many ways in which the defence acquisition process can be improved, and there is a great deal of literature available to guide this remedial process. However, two fundamental points need to be made. First, there is regular and frequent interaction between defence and private sector industry, and this leads to positive exchanges of ideas and a shared understanding of objectives and processes. Secondly, research comparisons between defence and the private sector highlight that weapons development is unlike the majority of other private sector project activities. For example, the demand for extremely advanced systems to provide force multiplier advantages and weapon system superiority over potential adversaries results in very high levels of financial and technological uncertainty and, therefore, risk. In such cases, defence requirements usually drive technology innovation beyond what is needed by the private sector for commercial purposes.

There are also fundamental differences in the developmental and production practices of defence and those of the private sector. For example, the private sector does not usually initiate product development until major state-of-the-art and marketing uncertainties have been resolved. Since the potential for commercial entropy is greater in major acquisition programs, the approach taken, particularly by well-established firms is, therefore, very conservative and is based on substantial research and information.

The primary investment factors considered by private sector firms are those associated with rates of return, market opportunities, and company position. Therefore, under extraordinary competitive pressures, a commercial development occasionally will push state-of-the-art technology, but on such occasions, novel weapons-like problems tend to occur: cost targets are exceeded, schedules are slipped, and the product fails to meet its performance promises (Peck and Scherer 1962: 9.583; see also Morris and Hough 1987; Hall 1982; Bennett 1990; and Biery 1992). For this reason, business and capability comparisons between novel weapons and “typical” commercial developments is not entirely representative of the relative efficiency or effectiveness of either defence or the private sector. Conversely, when major
defence projects do not involve state-of-the-art, novel technology and there is not a great deal of uncertainty or risk, commercial economic and financial practices are appropriate.

The recent controversy over the Civil Aviation Authority's acquisition of a new radar system, however, highlights the fact that all major public sector projects, which spend tax payers' funds, are subject to different expenditure criteria than those of the purely private sector. Consequently, the extent of public sector reform possible will be limited by the very different roles and constraints of the private and public sectors. The level of efficiency and effectiveness associated with the use of commercial practices will also be influenced by the non-market characteristics of weapons acquisition.

**Non-Market Character of Defence Acquisition**

The traditional concept of the market system operates in the following way. A company will develop a product in response to a perceived demand by potential consumers, the perceived demand is ideally based on some form of rigorous market research, and the company raises the necessary funding to develop, manufacture and distribute the product. Since the company will bear all risk in a new venture, the development of private sector options will usually be based on highly realistic or "worst case" scenarios. New proposals will, therefore, be approved on the basis that there are no illusory financial or resource offsets essential to the achievement of the agreed program — even though gap analysis will invariably identify surplus resources to reduce overall project cost. Those firms which assume that integral factors of production will be available when and as required, and assume "best case" scenarios throughout the project, inherently incorporate substantial and unacceptable levels of technical uncertainty and financial risk.

The primary characteristic of this market process, in simple terms, is that there will be buyers for the product and it will be sold at a price that will achieve the more important objectives of the company: generate an acceptable level of profit, capture a market share, reduce a competitor's market opportunities, or exploit a market niche. Buyers will purchase the product if it meets their needs and the product is superior in some way to the product offered by the company's competitors. This interaction between buyer and seller at the point of sale constitutes a market. Thus, a market system decentralises decisions on what to produce and what price can be applied for a product.

With weapon system acquisition, the buyer (defence) determines a need and formulates the proposal for a new capability. Defence takes the initiative on new products and invites the participation of the seller (private sector industry). In most major acquisitions it is defence that finances the development of the weapon system: through research and development (R&D), the development of new systems, the adaptation of existing systems or technology, and by furnishing industry with government-owned assets. Defence, as the buyer, therefore, bears the majority of the risk associated with the acquisition. The private sector develops the product based on defence specifications or performance requirements, often without knowing what the final cost will be or whether the requirements can be met in the way originally envisaged — in quite a few cases, the weapon system to be developed (or assembled) will be unlike any other anywhere in the world, the Blackhawk helicopters, Perentie vehicles, the Australian Frigates, and the Collins Class Submarines, are examples. Consequently, development of the product will progress through a number of iterations, and at any point there is a risk, albeit slight, that the acquisition will be cancelled or substantially modified. Even so, industry will usually seek to maximise its business opportunities and amortise costs within the agreement made with defence, and this will influence the system's eventual cost, performance, and schedule.

The close interaction between defence and the firm in the development or adaptation of the new weapons system, precludes the determination of price by market competition. The competition that usually occurs is between firms offering different weapons system, such as Sikosky (Blackhawk) and Aerospatiale (Super puma), Landrover and Mercedes, and Thompson CSF and Hughes. It is assumed (often erroneously) that such competition will drive down the price of the preferred weapon system. Even when such competition is conducted, the choice of Australian manufacturer and assembly facility is very limited. Once the contract has been awarded, further competition is rarely sought by defence, even when significant changes to the original specifications or requirement are made. Thus, the determination of a weapon system's price does not conform to that of a market system. Additionally, in acquiring a weapon system, defence has the bargaining power of a monopolist, and the firm has the power of a monopolist — which limits further the utilisation of
the full range of business mechanisms for defence and industry.

Market systems (in the more traditional sense of the word) are, therefore, analytically inappropriate for determining the efficiency or effectiveness of major weapons acquisitions (Peck and Scherer 1962; Morris and Hough 1987; Hall 1982; and Scott 1992).

**Characteristics of Weapon Programs**

The weapons acquisition process within defence comprises four broad phases: planning, approval, implementation and acceptance. The planning phase should begin many years before the system is required for service because “crash programs are not only more expensive, but more risky” (Peck and Scherer 1962:313). A lengthy process of decision-making is also needed to ensure that rational, comprehensive strategic planning is effected: all issues are considered and are fully discussed by all relevant individuals and groups, that appropriate research is conducted, that the consequences of decisions are carefully measured before decisions are agreed and implemented, and that all stages of the program are monitored and evaluated.

The proposals emanating from the analysis of options by defence must then be approved by the Minister and Cabinet, and funding granted. The approval phases also contain agreement to the source, or even company, preferred by defence to develop and produce the system. In recent years, the amount, value and type of work offered to Australian industry has been one of the primary considerations of the approval process. The implementation phase involves the development, manufacture and/or assembly of the weapon system and concludes with the delivery of the required product, which is then tested by Defence. If the product is successful in testing, it is then accepted and introduced into service. These phases, however, are rarely delineated so clearly and they usually overlap.

Within the planning phase there is often disagreement and dissention among the various committee members, with “players” taking stands based on their professional expertise and their perception of decision making rationality within the bargaining framework of the committee process. Consequently, planning conducted within the committee process (certainly from the late 1970s to mid-to-late 1980s) can be characterised as non-rational, resulting in delays in project approval — thus increasing the likelihood of “crash programs” (Earnshaw 1994, Bennett 1990, Ball 1979).

Within the implementation phase, there are three sub-phases: R&D (which may include the development necessary to adapt systems to meet unique Australian requirements), actual prototype operation, and production for the operational inventory. Each sub-phase should attract considerable attention and evaluation because each is characterised by high levels of expenditure. For example, the implementation phase involves investment in many areas, such as R&D, testing, detailed design, quality assurance, weapons systems inventory development, initial logistics support, plus a budgetary commitment to recurring expenditures for personnel, training, and ongoing logistics support. Substantial empirical data indicate that during the life cycle of advanced weapons systems, and many advanced commercial product innovations, the rate of expenditure on these initial development activities increases and then declines according to a regular pattern. (See, for example, Peck and Scherer 1962:310, although the development expenditure curve is much steeper today than that shown in the reference).

Over the life of a weapon system, expenditures on R&D are substantially less than the combined total expenditure on testing, production and operation (Peck and Scherer 1962:311). However, the point of greatest uncertainty in the entire acquisition process is within the R&D sub-phase (Earnshaw 1994 shows, for example, that this applies also for Australian industry, which typically does not become involved in really novel weapon system R&D, certainly not to the same extent as in the US).

In recent years, the resources and expenditure associated with R&D has come to claim a much larger share of the total life cycle cost of a weapon system. There are two reasons for this trend. The increasing complexity of weapon systems, which also extends scientific knowledge and state-of-the-art technology and performance, requires substantial investment. Secondly, defence seeks to reduce the complexity associated with the use of the system in the field, and to extend the time the system is available for use. These additional user needs must be dealt with in the R&D sub-phase if the product is to fulfil critical strategic operations and support requirements. Consequently, an increasing level of expenditure now occurs during the period of greatest uncertainty and risk. The R&D phase of the project is, therefore, very different to that of the later acquisition phases, and must be managed differently.

One major impact of the trend towards increasing complexity and associated rising costs of weapon
systems, is that fewer quantities of a particular system are acquired. This is of itself problematic for defence operations, for “many military theorists argue that quantity has an even greater effect (on military effectiveness) than individual weapon performance” (Gansler 1989:172; see also Ball 1979). Augustine (1986:111) extrapolates this trend in the US and observes that “by the year 2054, the entire defense budget will purchase just one aircraft. This aircraft will have to be shared by the Air Force and Navy 3.5 days each per week except for leap year, when it will be made available to the Marines for the extra day.” Many other “Laws” are offered in Augustine’s analysis, and they all contain more than a grain of truth!

A further result of increasing expenditure on R&D is that few programs are cancelled. Once funding has been “sunk” into the development of a particular program, decisions are limited to three main options: to terminate the program, to continue it, or to replace it. Terminating a program is rare, for the program is based usually on the initiatives of the Services and there still exists a demand for a new (often replacement) system. To continue with the program commits the buyer to further incremental costs, but provided the development has met defence expectations (at least in terms of system performance), and a great deal of the uncertainty associated with the weapons development has been resolved, the incremental costs necessary to complete the program may be acceptable. The fate of the project, therefore, hinges on defence’s (and in particular, the Service’s) assessment of whether the military value of the system exceeds the incremental costs necessary for completion. If the true cost of the program were known beforehand, however, the project would probably not have been approved. (see, for example, the Concorde case study in Hall 1982).

A project that is considered to be unsuccessful (does not meet performance requirements, experiences substantial schedule slippages, and/or the program budget has been exceeded) can be replaced if the total costs of an alternative program are less than the incremental costs of the existing program, or the alternative offers greater operational capability. However, this option inherently comprises a much higher level of uncertainty and risk, not only in financial terms but for the weapon system preferred by the original project sponsor. The choice between programs is not, therefore, a straightforward one, because to choose another program would involve a complete analysis of whether the program is needed at all, or whether the objective can be met in a more cost effective manner. Accordingly, the relative stability and financial certainty offered by a project well down stream usually prevails in the decision making process.

The high level of technical uncertainty and financial risk associated with the early stages of acquisition is often compounded by defence and industry relationships. The basis used most often for program consideration and selection is data obtained (either directly or indirectly) from potential contractors. This data is usually optimistic in terms of meeting all of defence’s requirements, particularly in the area of cost and schedule (Earnshaw 1994; Bennett 1990). Even though defence is aware of this possibility, it may not possess, or have access to, the contractor’s technical, financial or managerial data to permit adequate scrutiny of proposals. Indeed, there is an advantage to be gained by both parties by using this optimistic data — it may be sufficient to get the program approved and started. Once the program has begun, for the reasons indicated above, it is very difficult to terminate.

The Cost of Major Projects and Risk

The high cost of equipment acquisitions results in the approval of only a few major capital projects each year. Cost and the scope of the requirement also limit opportunities to engage contractors in competition with one another: to allow market forces to operate, to enable comparisons between products and cost, and to reduce project uncertainty. Since competition is rarely arranged after the contract has been signed to develop and produce a major weapon system, the incentive for the potential contractor is to win the contract with the lowest possible price (even tendering a price that would result in a company loss), and then to “get well” financially through changes to the contract (Gansler 1989:167). Since major projects of a specific type come along only once every 15–20 years (for example, a new fighter aircraft, replacement of a complete radar system, or a brand new military capability) the contractor is left with two options: to offer an ambit bid, or possibly be excluded from a program for a substantial length of time.

An unrealistic price by contractors compounds financial and budgetary problems. There is evidence to indicate that the defence acquisition organisations of some countries (particularly the US, but including Australia) are aware that contractors’ prices are below those considered commercially acceptable and that additional resources will need to be injected into the
(project after contract signature (Gansler 1989:167; Earnshaw 1994). For example, a 1979 US General Accounting Office (GAO) report, which confirmed an earlier (1972 GAO) study, “failed to find one example where the DoD accurately estimated or overestimated the cost of any major weapon system”. Even this finding was found to be very conservative by a United States Air Force (USAF) study in 1981, which revealed that major acquisition proposals unrealistically assumed that growing budgets in future years would provide the additional funding needed (Gansler 1989:176). In the majority of cases, therefore, programs were found to exceed their originally approved and budgeted cost, and to create a “bow wave” of planned versus actual expenditures. The impact of such systemic practices undermines the integrity of national budget and funding allocations, and leads to avoidable and unnecessary resource pressures on both government and government departments.

Erroneous costing of major acquisition proposals can be avoided, however, even in a high technology and uncertain environment. During the first Reagan administration, for example, when inflation was relatively low and the defence budget received substantial increases in funding, defence reduced its cost overruns from an annual rate of about 14 per cent in 1980 to less than 1 per cent in 1984. The Congressional Budget Office acknowledged that program cost estimates for 1985 actually fell (Griffiths 1986:45). Such events lead to the conclusion that a “combination of better budgeting (covering likely costs and likely contingencies), improved management of individual programs, and corrective actions in the overall defense industry” would help to reduce or obviate project cost overruns (Gansler 1989:91).

Numerous recent studies by the US Department of Defense (DoD) and by independent research organisations show that the principal causes of cost growth and schedule slippages are instability (frequent changes) in program budgets and/or weapon system requirements (such as, performance requirements, and quantity requirements) (Gansler 1989:121). This extensive US research has identified three main reasons for instability: annual or even more frequent departures from the expected or planned level of budgetary allocations to defence, and particularly the allocations to individual military services; externally generated changes in an individual program’s budget quantities, and/or technical requirements; and changes generated from within the program to remedy deficiencies, such as low initial cost estimates or technical problems. These sources of instability were found to require project funding increases well beyond original budget and funding authorisations, and to lead to dysfunctional and inefficient management practices, such as extending the project and acquiring fewer production units per year (Gansler 1989: 121–124). These characteristics are present in the Australian defence organisation, and one other factor can be added: the dysfunctional and unnecessarily costly incremental acquisition of weapons systems numbers (the Perentie and Blackhawk projects are examples) that militate against accurate budgetary requirements and industrial efficiency.

### Acquisition Budgeting and Funding as Reform Prescriptions

The manner in which projects are estimated and funded has been found to influence the project’s chances of success (Morris and Hough 1987:230). Accordingly, defence must clearly define, and specify “up front” the total number of weapons systems required over time, all costs associated with the project, including an allowance for cost escalation and contingencies, and the actual final cost.

Contingencies are a legitimate component of costing proposals, but are often regarded as “poor management” by reviewers who assume that if a problem is foreseeable, it is avoidable (Gansler 1989:91). On the other hand, contingency funding that is allocated at the beginning of a project but is not used, constitutes a waste of resources. Primarily, however, there should be no expectation by project personnel of additional funding for the project in future years. Adoption of this discipline would encourage the project sponsor to undertake a most rigorous and comprehensive risk analysis of the project for in effect, financial risk analysis incorporates an analysis of all the risks of the project, whether they be technical, organisational, managerial, or political, as well as specific financial factors, such as exchange rate variation risks (Morris and Hough 1987:230).

In Australia, financial risk analysis has been a part of the defence acquisition process for many years, but projects are still considered to perform unsatisfactorily. There are many reasons why the current methods of risk analysis are deficient; however, for a number of projects, the largest single rise in project cost can be attributed to the variations allowed under a contract, such as labour, and exchange rates, which (in simple terms) can add as much as a third to total eventual project costs (see Earnshaw 1994).

The Australian Department of Defence employs a five year rolling program to reflect planning and
budgetary needs, and within this budgetary program it provides government with a three year financial estimates plan. Additionally, in recent years there have been moves to create a 10 year budgetary and financial plan for capital acquisitions. At any given moment, therefore, defence is involved with multiple budgets in various stages of development. It is spending according to the current budget, substantiating the next one, and planning for the remainder. Since hundreds or thousands of detailed changes are made in the current year’s and the next year’s budgets as they wind their way through the various departmental committees, Cabinet, and Parliament, there is a multiplicative “ripple effect” of changes continuously taking place in the subsequent year’s plans and in the programs themselves. A similar situation exists in the United States and many other developed nations, and “the amount of time, effort, and money demanded and wasted are extraordinary” (Gansler 1989:95).

The current Program Management Budgeting (PMB) system used by the Australian defence establishment (and all other government departments) to provide for its various programs is based largely on the Planning, Programming, and Budgeting System (PPBS) introduced into the Pentagon by Secretary of Defense Robert McNamara in the early 1960s. From its earliest days, PPBS incorporated three major innovations in public budgeting: multi-year visibility, a mission orientation cutting across organisational lines, and an analytically-based capability to examine major segments of the defence program (Rice 1979).

The US gradually found that a five-year fiscal plan was inappropriate for weapon-system life cycles that involved several years of development and several years of production. Thus, the “Extended Planning Annex” concept was introduced to extend the fiscal planning cycle to 15 years (Gansler 1989:96).

A similarity, therefore, exists between events and experience in the US and those in Australia, which extends to the continued focus by both Parliament and Congress on the first year of the budget, and contingent funding, so that any funding and planning beyond the current financial year is considered to be little more than a “wish list” by government departments. Consequently, the credibility afforded to “out-year” plans and the ability of defence to interact strategically with industry in a “partnering” role, is diminished. Conversely, European countries, which do not seem to attract the same sorts of funding criticisms as those of Australia and the US, place considerable emphasis on their long-range fiscal plans for weapons acquisition (Gansler 1989:98).

In 1987, in response to the recommendations of the President’s Blue Ribbon (Packard) Commission, the US DoD adopted a two-year budget while still maintaining a five-year fiscal-planning horizon. It was intended that as a consequence of this initiative, Congress would also adopt the two-year budget, thereby providing much needed stability and the mechanisms for long-range planning in the overall defence resource allocation process. Unfortunately, Congress continued to focus on the first year of the budget proposal (Gansler 1989:98), but Packard (191) still retains the view that it is the lack of budget flexibility that continues to create the most difficulties for major capital acquisition programs. In Australia, this difficulty extends to the need to expend funds (however wisely) before the completion of every budget year.

While the multi-year budget process may reduce the flexibility of both the legislative and executive branches of government by constricting their power to vary programs, such a form of budgeting can enhance stability for government departments, and therefore, the efficiency and effectiveness of programs. (Then) Senator Dan Quayle is attributed with providing the mechanisms for budgetary stability for programs in the US. In 1986, he sponsored a bill through Congress that changed the way in which defence projects would be funded. Congress would, in future, budget for and fund “enterprise programs” in two phases: at the beginning of a weapon system’s development and again at the beginning of its production. Full funding would be committed for either the development or the production of that program. The necessary dollars would then be built into the subsequent years’ authorisations and appropriations.

While these innovations hold considerable promise for solving many of Australia’s defence funding problems, actual budget allocations to government departments would still remain unpredictable from year to year. Thus, without knowing the total dollars available, a defence organisation (whether Australian or US) would most likely be reluctant to commit many programs to this concept (Gansler 1989:112). Nevertheless, if used selectively for major capital acquisitions, the multi-year budget would provide much needed financial stability for projects and the carry over of appropriate funding to successive budgetary years. Certainly, defence would then possess the discretionary capability to spend efficiently and effectively throughout a project, thus avoiding the potential for crash spending programs. As both the US Grace Commission (1983) and the Packard Commission (1986) reported, instability in the defence budget process costs defence, and therefore taxpayer’s, many billions of dollars and this waste of taxpayers funds would be avoided if Congress (or Parliament) increased the budgetary flexibility of defence.
Such an approach, while reminiscent of the pre-budgetary era characteristics of continuousness, decentralisation, privatisation, and expedients (Caiden 1989), would not represent a return to the deficiencies of that era: principally because financial reporting and information gathering mechanisms are sophisticated and integral to current departmental practices. As the pre-budgetary era gave way to the budgetary era, the situation today indicates the need for a further evolutionary change. The Commonwealth budget is no longer small, the lead times for procurement of relatively complex equipments are becoming longer, and many budget committees, such as the Expenditure Review Committee and inter and intra-departmental committees, are required to plan and manage the nation’s budgetary arrangements. The financial situation for major projects is no longer conducive to the annual budget process and the mechanisms to manage multi-year budgets are already in place.

**Conclusion**

From the above discussion, it is clear that measures other than those of simply adopting private sector practices and budgetary reform are needed to remedy the more important project deficiencies. It is also evident that other reform measures rest on a single observation: there is an urgent need for more rational and comprehensive research before project proposals reach the higher committee stages of defence. Since research is an integral element of planning, the reform concept needs to be broadened to include the entire planning process.

For example, planning for major new projects needs to encompass all relevant areas of defence at the inception phase of a proposal to ensure that all options are identified and evaluated — the time has long since passed when the research process can be allowed to focus solely on the merits of a weapon system preferred by a single Service. The committee process is fine, but should not be used as the primary forum for research. Greater initial research (perhaps similar to that used for the Australian Frigate Project) into the need for new systems beyond the “replacement syndrome”, and with more substantial resources allocated to this research (say 5 to 10 per cent of the estimated project cost and a dedicated project team at the initial proposal stage) is warranted.

Further, defence has been severely criticised in the past for its management of projects and failure to contain costs and schedules. In response, defence has more recently adopted a policy of transferring financial uncertainty and risk to industry, primarily through the use of firm-fixed-price contracts. In many respects, this approach militates against the concept of “partnering” — at least in its mid-1980s form, and is inequitable — often the Australian firm involved in the partial development and assembly of a uniquely Australian weapon system does not possess a complete understanding of the requirements of the project, overestimates the capability of an overseas prime contractor to meet Australian defence requirements, and is often forced to bid for project participation in a constrained time-frame. Prima facie, therefore, two solutions are appropriate in this context: utilise the prototyping trials process to a much greater extent prior to the selection of the preferred weapon system — as per the Perentie vehicle project — and use a mix of contracting arrangements for the phases of greatest uncertainty. This last point would indicate the use of firm-fixed-price contracts for only the more routine of the project phases — there seems little point in driving a company to the wall because it underestimated the cost of R&D, particularly if that company provides a strategic defence capability, or in paying a firm too much because in quoting for the project the company assumed that what could go wrong would do so.

Finally, if the total quantity of weapons systems required can be agreed at project approval, and acquisition decisions for further buys of systems not deferred for future committee consideration, project costs can be reduced and industrial efficiency enhanced. At present, opportunities for realistic production assessments, flatter cost amortisation, and full industrial preparedness are often lost in particular industry sectors (see Earnshaw 1994). In part, this problem results from the inadequacies of the annual budgetary process.

A number of critical project objectives can, therefore, be met by placing a much greater emphasis on initial planning and analysis: full and proper assessment of requirements, accurate estimating and costing of projects, far greater inter-service integration of military planning (in the areas of strategy, resources, and weapon requirements), the determination of program priorities and a firm commitment to them. As Gansler (1989:140) observes, even though:

>“These improvements will be difficult to achieve... their combined effect will make an enormous difference in the effectiveness and the efficiency with which the defence budget is utilised to provide national security”.


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Wing Commander Paul Earnshaw, M Pub Admin, Grad Dip Admin, psc., joined the RAAF in 1968 as an Education Assistant, and was commissioned into the Equipment/Supply Branch in 1970. He resigned his commission in 1990. During his RAAF career he served at a number of RAAF bases in Australia, as well as six months with 5 Squadron Detachment, United Nations Emergency Force II, based in Egypt, and three years in the Embassy of Australia, Washington DC.

Since leaving the RAAF, he has worked as a Research Officer in the Centre for Research in Public Sector Management, University of Canberra, and as a part-time lecturer and tutor in Public Administration and Management at both the postgraduate and undergraduate levels, also at the University of Canberra.


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Ejection Seats — The Next Generation

By Flight Lieutenant David G. Newman, RAAF.

Introduction

Today's modern ejection seat is an extraordinarily sophisticated piece of equipment. More than 6000 pilots worldwide can testify to its effectiveness in extricating them from an emergency situation. From the time it first came into service, the ejection seat has been consistently upgraded and developed. Early seats were simple ballistic devices designed to get the pilot out of the airframe, whereas the modern seat of today is a fully automated, reliable escape system employing the latest in rocket propulsion techniques.

Having reached such a level of technological superiority, it seems a logical question to ask whether the ejection seat has reached the limit of its development potential. The answer to this question is no. Current ejection seats have a variety of performance limitations, depending on the particular model involved. The level of research activity around the world into overcoming these limitations shows that the ejection seats of tomorrow will be far more capable escape systems than the ones we currently use. The purpose of this article is to give the reader a general appreciation of some of these performance limitations, and also to give some idea of what we can expect in the future in terms of advanced technology assisted escape systems.

In order to do this, the article will focus on three aspects of modern ejection seat research and development:

1. Helicopter ejection seats,
2. Supersonic ejection seats, and
3. The "smart" ejection seat.

Helicopter Ejection Seats

The problem of escape from helicopters has proven to be a vexing one for scientists. The possibility of fitting an ejection seat to the helicopter has been investigated over the years, and in all cases the idea has been dismissed as technically infeasible. The reasons for this are readily apparent. Helicopters tend to operate at low altitude, which does not afford much time for an escape system to function. The presence of the main rotor also proved to be a major stumbling block. If ejection was initiated, the pilot had to negotiate the blades somehow. Various ideas were developed. One suggestion was to explode the blades away from the mast head, in much the same way as canopies are jettisoned from fighter aircraft. This would allow a clear ejection path for the escaping crew. This proved to be an unreliable and time-consuming method.

Another idea was to eject the crew using an L-shaped trajectory. The ejectee would depart the helicopter laterally, until beyond the margin of the rotor disc, at which point the trajectory would change to a vertical one and the normal ejection sequence would continue. This too was dismissed as impractical, imposing as it did too great a lateral G-load on the aircrew. Another problem with this method was imprecise control of the ejection trajectory, leading to potential problems in clearing the rotor disc.

Thus, the provision of an ejection seat capability for helicopters was deemed impractical. Attention was directed instead at making helicopters more crashworthy. However, despite all the technical and theoretical problems, there is in existence today an operational helicopter fitted with an ejection seat — the Kamov Ka-50 Werewolf helicopter.

The Russian Kamov Bureau developed the Ka-50 as a direct competitor for the US AH-64 Apache attack helicopter. The single-seat Werewolf has a coaxial contra-rotating rotor system which obviates the need for a tail rotor. More significantly, the Kamov designers have incorporated a pilot ejection seat into the aircraft. The K-37 ejection seat functions in many respects like the systems employed in aircraft such as the Douglas A-1 Skyraider, the 0-2A and the T-37. A rocket is used to pull the pilot out of the aircraft, leaving the seat behind. The parachute is then deployed. The system fitted to the Ka-50 utilises an explosive blade separation system, which affords the escaping pilot a clear path. There are problems with this design, however. While Kamov claims the system is zero-zero capable, it apparently takes 3 seconds for blade separation and pilot extraction to occur successfully. Obviously, at low altitude and high speed, three seconds may be a luxury. Nonetheless,
the aircraft flies with the seat system fitted, although there are no reports of its having been used to date.

**Supersonic Ejection Seats**

The ejection seat has by necessity had to become more capable in response to the increasing levels of performance of modern fighter aircraft. As speeds have steadily increased, the ejection seat has had more and more demands placed upon it. With the advent of the supersonic age, the problems of escape from high speed aircraft were compounded. It is clearly more dangerous to eject at supersonic speed than it is at subsonic speed. This is because at speeds in excess of Mach 1 the effects of windblast on the human body become extreme, and with this is a correspondingly higher rate of major injury.

Some pilots have ejected at supersonic speed and survived, but not without major injuries. George F. Smith is a perfect example. He was a civilian test pilot, and on 26 February 1955 he ejected from his stricken F-100A fighter at a speed of Mach 1.05. He suffered major injuries, including internal haemorrhaging, a perforated intestine, liver damage and eye and ear trauma. He eventually recovered and returned to flying fast jets. It is significant to note that all of his injuries were attributed to the effects of high speed windblast.

George Smith’s story illustrates quite profoundly the effects of ejecting beyond Mach 1. The massive linear decelerations imparted to his body by exposure to the supersonic airstream were calculated as follows: at head level, a peak deceleration of 64G at a rate of onset of 700G/sec; at torso level, a peak G of 50G at a rate of onset of 1300G/sec. The physical effects of these forces on his body were extremely significant. He was lucky to survive his ejection, given that it was far outside the performance envelope of the ejection seat involved.

Modern fighter aircraft are capable of sustained flight at up to Mach 2.0, and as technology continues to expand the speed range of these aircraft the possibility of supersonic ejection becomes increasingly likely. However, the current generation of ejection seat would seem to be far less capable of successful supersonic ejection than is required. USAF experience with the ACES II seat (fitted to aircraft such as the F-16) shows that the potential for major injury with this seat rises at speeds in excess of 425 knots. US ejection seats in general are designed for ejections of up to 600 knots maximum.

Recently it was revealed that Russia has fitted to some of its most potent fighters supersonically-rated ejection seats. The K-36D is fitted to the Mig-29 Fulcrum, and is capable of survivable ejections at speeds of up to 755 knots (1400 km/h). These seats also have enhanced windblast protection and seat stabilisation systems. The Russian Zvezda design bureau claims to have achieved successful operational ejections at speeds in excess of 700 knots.

These performance claims represent a significant advance in ejection seat design and capability. So much so that the United States has entered into a $1.59 million foreign comparative testing programme to validate these claims, including acquiring a number of K-36 seats for evaluation in America.

**The “Smart” Ejection Seat**

Perhaps the biggest advance in ejection seat design will be the inclusion of computers. “Smart” weapons have been with us for some time and were used with considerable effectiveness during the Gulf War. So it is only a matter of time before we see fully computerised ejection seats fitted to fighter aircraft.

The combination of an ejection seat with a modern computer has the advantage of markedly improving the overall capability of the seat, resulting in a “smart” seat. This concept has been the subject of considerable research and development in the last several years, particularly in the United States.

Smart ejection seats have their own inbuilt flight computer which receives information concerning aircraft attitude, altitude and airspeed on a regular basis. At the moment of ejection, the computer is able to process this information and generate a threat assessment based on aircraft performance at the time, and thus determine the optimum escape solution.

The other essential ingredient in the smart ejection seat is a thrust vectoring control (TVC) system. The TVC system involves a solid-fuel rocket motor with two thrust-vectoring nozzles and six small attitude-stabilising motors. This is coupled to the flight computer of the seat, and in essence carries out the best ejection trajectory solution calculated by the computer. For example, if the seat is fired at high altitude in straight and level flight, the computer will generate a minimum-performance solution for the TVC, so that the seat will leave the aircraft with just enough force to clear the aircraft structures, i.e. the vertical stabiliser. Conversely, at low-level in a rapid roll, the computer would demand a maximum performance
ejection from the TVC, up to the limit of human tolerance.

Thus, the smart seat will be able to adjust its ejection trajectory to suit the particular situation. In the low-level example above, the seat would also be able to sense terrain and, via its TVC, avoid ground collision and automatically steer itself into clear space. Parachute deployment and seat-man separation would then occur at the most optimum altitude.

Ejection while inverted close to the ground would be far less hazardous than it is at present. The seat would initially fly towards the ground, but the TVC system would delay parachute deployment, steer the seat away from terrain, turn it through 180 degrees and climb away from the ground to an altitude determined as optimum by the computer for separation from the seat and parachute deployment.

In theory, this seat represents a quantum leap in assisted escape system technology. It is, however, no longer just a theory. It is in the development stages at present, and contracts have been issued for developmental testing and production of prototypes. McDonnell Douglas Aircraft Escape Systems won a contract in early 1993 with the USAF for a research/technology demonstration programme involving the smart ejection seat. The four-year project will eventually lead to production of smart seats for incorporation into next-generation fighters.

Testing of the prototype seats will involve rocket-sled tests at speeds up to 700 knots and 90 degrees of bank. Some tests will involve roll rates of up to 360 degrees/sec. The feasibility of TVC technology will be demonstrated under these rigorous conditions.

Plans are also underway for the incorporation of stealth technology into the ejection seat. Radar reflectivity of the seat, particularly the parachute-containing head box, will be reduced and actuator assemblies will be boxed in.

Smart ejection seats will thus be far more capable escape devices. Aircrew survivability will be significantly increased due to the seat’s greatly expanded flight envelope.

Conclusion

The ejection seat clearly has a lot of development potential left in it. It has obviously not reached the limits of its capabilities. It still needs to have its supersonic flight envelope expanded, its windblast protection enhanced, its structure made more “stealthy”, its systems computerised, its propulsion systems expanded to include thrust-vectoring, attitude-stabilising and automatic terrain-avoidance, and its role in the helicopter refined and developed.

There is clearly a huge amount of research and development still to be done in optimising the ejection seat for use in the next century. The ejection seats of the future promise to be even more capable over a far wider range of flight conditions. This is clearly a comforting thought for the aircrew who trust their lives to these devices on a daily basis.

NOTES

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Logistic Challenges for the Royal Australian Navy

By Captain Michael F. Horne, RAN.

Introduction

The Australian Government's thrust towards a more self-reliant posture has resulted in a resurgence of the Australian ship building industry with the in-country construction of ten ANZAC Class Frigates styled on the German MEKO 200, and six Collins Class submarines based on a Swedish Type 471 variant. Other platforms for Hydrographic and Mine Hunter requirements will be built in-country based on overseas, in-service designs.

The use of techniques such as Logistic Support Analysis (LSA), through life data management and condition monitoring in achieving the aim of reducing overall life cycle costs and improving in-service platform management, will facilitate the growing of the "parent" navy role for the RAN. However, the end result must not see overseas designed equipment become orphans. Self-reliance does not mean self-sufficiency, an essential aspect of the supportability of new platforms in the RAN which must be injected into the planning.

Self-reliance

The basic framework for the long term development of the Australian Defence Force (ADF) is articulated by the Government policy information paper *The Defence of Australia 1987 (DOA 87)* (Dept. of Defence, 1987). Central to the theme is the establishment of self-reliance in defence, supported by a positive regional security environment and strong alliances. An extensive process of reform and restructuring has been put into place, within the Australian Defence organisation to implement this policy. Part of this process has been a substantial capital equipment investment program reflecting self-reliance objectives.

The Australian Government's drive towards self-reliance demands a defence force capable of independent operations:

"Fundamental to this capability are appropriately sited bases, effective logistic arrangements and the scientific and industrial ability to select, adapt, repair, maintain and develop defence equipment. The Government will continue to give priority to these essential elements of defence support, recognising that defence self reliance demands increased indigenous capabilities in areas where we previously depended on our allies" (Dept. of Defence, 1987, p.74)

In May 1987, the Government announced the decision to build six diesel electric submarines in Australia to replace the ageing Oberon Class. In June 1987, a contract was signed with the Australian Submarine Corporation to construct the Collins Class Submarines to a derivative of the Swedish Type 471 design.

In November 1989, a contract was awarded to Transfield Shipbuilding to construct ten 3500 tonne ANZAC Class Frigates at its Williamstown yard in Victoria to replace the River Class Frigates. Based on the Blohm and Voss Meko 200 design with delivery commencing in 1996 and completing in 2004, the second and fourth ships are being constructed for the Royal New Zealand Navy.

In May 1991, the Government approved a fundamental review of the structure of the ADF and announced that the number of surface combatants would increase from 12 to 16 or 17 by 2009, the 15 ageing Fremantle Class Patrol Boats would be replaced by 12 more capable offshore patrol vessels for delivery by 2004, four coastal minehunters would be acquired, and the amphibious support/training ships HMAS *Tobruk* and *Jervis Bay* would be replaced. The Government re-affirmed its commitment to base half the RAN Fleet, including all Collins Class Submarines, in Western Australia at the major Naval base HMAS *Stirling*.

In May 1992, a review of Defence industry policy was launched which aimed to chart the way ahead for the relationship between defence and industry through a clearer and more comprehensive statement than that which was contained in *DOA 87*. The subsequent report, the *Defence Policy and Industry Report* (Dept. of Defence, 1992, p.13), observed that: "In a more complex post Cold War Security environment, it is important that Australia continues to build its defence capabilities so as to provide for future contingencies. A major factor in this regard is the aggressive marketing and acquisition in our
region of modern military technologies, and the increasing ability of regional countries to absorb and support such technologies.”

In December 1993, the government updated strategic guidance in its policy document Strategic Review 93 (Dept. of Defence, 1993a). Covering a time-frame of 3-5 years, it forms part of a continuous cycle of Defence planning and is the prelude to the major update of DOA 87 which is due for publication later this year.

A cornerstone of the self-reliance policy is increased Australian Industry Involvement (All) in Defence support. Government policy is to facilitate Australian industry initiatives in the international market place with the aim of encouraging a viable industrial base that can effectively compete in international markets, with Defence benefiting on that basis. Since the late 80’s, the percentage of defence capital equipment budget spent in Australia has more than doubled from some 30 per cent to some 60 per cent with ANZAC and Collins programs achieving in excess of 70 per cent (Parliament of Aust., 1992).

This has been largely achieved by respective building companies developing strategic partnering arrangements with overseas companies, resulting in local industry acquiring licenses to produce ship related components. Australian industry has benefited considerably by the transfer of technology including increasing the workforce skills base whilst being recognised internationally for improved quality by accreditation to ISO 9000/AS3900 standards.

The 1993-97 major Defence capital equipment program of some A$30 billion with A$9.5 billion allocated for Collins Submarines and ANZAC Ships, as shown in Figure 1 (Dept of Defence, 1993b), gives real meaning to the Government’s commitment to the self-reliance journey and a huge boost to the national shipbuilding industry.

Un-approved Defence major projects proposed for submission for approval between 1993 and 1997 consist of at least 97 projects, including coastal mine-hunters and patrol combatants, with planned expenditure spread shown in Figure 2.

**Figure 1**
Approved New Major Capital Equipment

![Figure 1](source: Defence Corporate Plan 1993-97)

**Figure 2**
Un-approved New Major Capital Equipment

![Figure 2](source: Defence Corporate Plan 1993-97)

**Logistic Challenges**

The bid for self-reliance brings with it significant logistic challenges which require the adoption of appropriate strategies. One of these challenges is the development of a parent navy capability where ships and systems will be fielded and supported by the RAN having been designed for the RAN and built in-country. For new platforms such as the ANZAC Ship and COLLINS Submarine, direct foreign navy support will not be available.

**Parent Navy**

Some logistic functions now required where previously support and information could be acquired from an allied navy include:

- continued development and enhancement of command and control and other operational software to meet evolving requirements;
- collection and analysis of reliability, availability, and maintainability (RAM) data;
- development of design changes or changes to logistic support arrangements to overcome problems which may be indicated by such data;
- modification of drawings and technical documentation arising from such changes;
- maintenance of configuration management;
- development and adjustment of maintenance and overhaul and other support policies as experience with platforms is gained:
Table 1
Difference in Arrangements for Logistic Functions for USN Sourced Ships and Australian Parent Navy ANZAC Ships

<table>
<thead>
<tr>
<th>Function</th>
<th>Arrangements for DDG/FFG</th>
<th>Arrangements for ANZAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of ship design changes</td>
<td>Major changes based on USN designs with detailed production drawings produced in Australia</td>
<td>Design of all changes in Australia with major structural modifications referred back to ship designer</td>
</tr>
<tr>
<td>Configuration management of ships and systems</td>
<td>Limited requirement — undertaken in USA</td>
<td>More extensive requirement — will be undertaken in Australia</td>
</tr>
<tr>
<td>Maintenance of drawings and other technical documentation</td>
<td>Ship Selected Record Drawings maintained in Australia; most others maintained by USN</td>
<td>Other than for equipment of USN origin, all drawings and documentation will be maintained in Australia</td>
</tr>
<tr>
<td>Application training on major systems and equipment</td>
<td>Majority sourced from USN or undertaken in US</td>
<td>Majority to be developed and undertaken in Australia</td>
</tr>
<tr>
<td>Weapon system software development/upgrade</td>
<td>Limited requirement — undertaken in USA</td>
<td>More extensive requirement — will be undertaken in Australia</td>
</tr>
<tr>
<td>Conduct of engineering investigations and development of configuration changes or other solutions to engineering and support problems</td>
<td>Some relatively minor work undertaken in Australia. Remainder undertaken by USN</td>
<td>Other than for equipment of USN origin, virtually all work will be undertaken in Australia</td>
</tr>
</tbody>
</table>

- development and updating of training courses and conduct of training; and
- adjustment of spares requirements (particularly critical in the absence of parent navy support for the provision of insurance spares).

This change in arrangements for logistic functions is demonstrated by differences in approach between USN sourced ships and the in-country designed and constructed ANZAC ships for which the RAN is assuming the parent navy role as shown in Table 1.

In order to meet the logistic challenges due to changes in Government policy for the establishment of self-reliance in defence, a fundamental logistic paradigm shift has occurred.

Support Centres

A strategy which the RAN is adopting to meet the changed arrangements for logistic functions, discussed previously, surrounds the logistic support organisational structure.

A significant aspect of platform support is the attempt to foster the “integration” part of that support. The RAN has conducted logistic support planning but integration of the various elements of logistic support was not previously a product of conscious or formalised process. “Good engineering practice” and practical experience provided by long term incumbents in the acquisition process, went some way towards developing appropriate logistic support plans. In the same fashion, planning for operations has been conducted to meet the Defence needs of Australia but no clear evidence of the interaction between operations and support to achieve a measurable outcome was evident.

In contemporary times, the pace and complexity of modern programs does not allow for an ad hoc planning process, hence a more structured and auditable approach is needed. The challenges of providing equipment for the operator at a very high level of availability, but at an affordable and achievable price, could appear from the support aspect to be incongruous; but this is the challenge of support. Included in the integration challenge is the need to inject the operational requirements, including the ability to specify equipment reliability, availability and maintainability outcomes.

Measurement of these parameters requires that the underlying definitions are relevant to the context in which they are used. RAN experience is that specification of Operational Availability ($A_0$) is appropriate only for specifying availability requirements for ship’s systems and equipment in order to achieve mission requirements. Determining when an entire ship is available is a separate issue.

RAN policy now mandates that when discussing a ship’s through-life requirements, project documentation is to define the required availability of the ship in terms of Availability For Sea ($A_S$). Definition of $A_0$ and $A_S$ in accordance with RAN usage are provided at Figure 3.

In order to be able to link operational and maintenance requirements, the RAN is undertaking a detailed analysis and revision of its current maintenance practices. Navy needs to be able to accurately forecast the cost of its activities particularly in a climate of...
The aim is to provide RAN operational and maintenance planners with the tools necessary to match equipment capabilities and usage against required missions and budgets. This will be of particular importance in the event of unscheduled activities such as the Desert Shield/Desert Storm deployment where Government can be provided with a clear indication of the additional funds which must be allocated in order to fulfill Allied/UN operational/peacekeeping commitments.

The major development in support planning has been in the project arena during the Acquisition Phase for it is here that the dedicated Integrated Logistic Support (ILS) team produces the necessary analysis to establish the initial support prior to equipment entering service. Once that support has been acquired and equipment fielded, various functional areas assume responsibility for it. Consequently, the potential for loss of impetus in through-life planning is quite high. The Project Director provides the focus for planning during the Acquisition Phase, but once in-service, there is no central authority or functional agency which consciously monitors or continues to integrate the operational outcomes of that support planning.

The support planning during the Acquisition Phase is based on a concept of operations and proposed equipment usage upkeep cycles developed from this concept. However, the ongoing interaction between operations and support is essential in providing optimum through-life integrated logistic support.

The nexus between the operational needs of specific platforms and their support requirements must be the focus of the Platform Support Centres currently under proposal for the RAN. The aim is to optimise through-life support of a platform after delivery into service and during operation to meet the capability requirement. The Support Centre will form an integral part of the capability introduced into service to meet force structure and preparedness (readiness & sustainability) requirements.

To establish a degree of self-reliance, it will be necessary to expand the range of data gathering activity on equipment in service and then use the information derived from this data for validation of original operational requirements. This will provide a greater opportunity to apply validation processes directly related to RAN requirements rather than relying on overseas data and validation which is not always applicable. Continuance of the ILS approach, established during the Acquisition Phase, is essential in order to ensure that the impact on the total support system of changes in any one area is fully considered.

Logistic Processes and Tools

A number of logistic processes and tools have been adopted to accommodate national self-reliance objectives whilst preserving allied logistic interoperability.

Logistic Information Management Systems

The requirement for computer based logistic information management systems to facilitate in-service support of RAN fleet units has been recognised for a number of years. Development work was undertaken with the aim of producing an integrated Ships Logistic Information Management system incorporating maintenance, configuration and supply management functions. To date, only the supply software module has been completed and installed in the Fleet.

Impetus for further progress for surface units is being driven by the ANZAC Ship Project. Tailoring and integration of commercial off the shelf packages is currently being undertaken with contractor support. Subject to successful trial, it is likely this software will be the basis of the systems to be used for other ship classes currently in service.

For the COLLINS Class Submarine, the project is developing a fully integrated shipboard and shore based logistic information management system. It will, interalia, receive data from operating machinery for the purpose of undertaking activities such as maintenance diagnostics, RAM analysis, identifying spares support requirements, etc.

Logistic Support Analysis (LSA)

Historically, the RAN has acquired equipment which was in service in other navies and logistic support was defined by the parent navies. There was little, if any, opportunity to optimise the readiness, sustainability and supportability of the systems/equipment for the Australian environment.

Ships were constructed in the main to operate in the North Atlantic. Any analysis which was undertaken was not done using a structured approach which achieves integration of the analysis tasks both within themselves and with the design efforts. The greater emphasis on self-reliance fostered by the COLLINS Submarine and ANZAC Ship Projects necessitated the development and implementation of Logistic Support Analysis policy in the RAN.

US DoD MIL-STD-1388-1A has been adopted as the basis of Defence LSA policy in Australia. In terms of application, the RAN currently has the highest level of activity of the three armed services. This is a conse-
quence of the number of major acquisition projects currently in progress for which Navy is the sponsor.

There has been some uncertainty in the implementation of LSA programs compliant with the requirements of 1388-1A, due in the main to:

- lack of LSA expertise within Navy and in contractor organisations, particularly in regard to tailoring 1388-1A in accordance with the type of acquisition program;
- costs associated with undertaking an LSA program based on 1388-1A.

The acquisition of six Minehunter vessels is the first real attempt by the RAN to implement a formal, tailored LSA program in accordance with 1388-1A. Lessons learned from this project will be applied to other new projects, for example, the Offshore Patrol Combatant.

Educating the Navy and especially project areas in the benefits of planning and implementing an appropriately tailored LSA program is an essential prerequisite to achieving proper application of the methodology. The introduction of Life Cycle Costing (LCC) techniques, with through life cost estimates mandated as contract deliverables for major projects, will also assist in ensuring that the mistakes of the past are not repeated.

Whist it is recognised that there may not be cost savings generated by this approach, it should nevertheless provide a better defined set of ILS deliverables from the acquisition process.

**Logistic Support Analysis Record (LSAR)**

The data which results from an LSA program must be stored and processed to produce useful information. Ease of transmission and use of this data within Defence and by external organisations, requires the adoption of standards which specify data formats and nomenclature as well as details of the reports which can be generated from this data.

As a consequence of ADF CALS policy, MIL-STD-1388-2A was adopted as the specification for the Logistic Support Analysis Record or LSAR. With developments in database technology, this standard has since been superseded by the 2B version.

Whilst adoption of 1388-2B accords with the aim of interoperability with our allies, there are some significant difficulties in applying it in Australia. The major problem is that the standard reflects US requirements. Outputs are designed to feed directly into US provisioning and maintenance systems. Direct use of data produced in accordance with this standard would require a major rewrite of current and planned RAN and Defence logistic information systems. The cost involved would be prohibitive and there would be unacceptable delays in the introduction into service of systems currently under development.

The alternative solution is the development of an interface capability which would enable conversion of data from US format into Australian format and thus permit transfer of LSA data into our logistic systems. This will not be a simple task but has been assessed as the most cost effective way of overcoming the problem. A tri-service working group has been formed to oversee the specification and development of the proposed interface package.

**Life Cycle Costing (LCC)**

In 1989, the Chief of the Australian Defence Force and the Secretary, Department of Defence, directed that through-life costs be better taken into consideration in procurement processes. The move towards self-reliance and the assumption of the parent navy role have further emphasised the importance of LCC for the RAN. Logistic Policy now requires that projects apply LCC principles and techniques to achieve the most efficient through-life logistic support that satisfies preparedness objectives.

LCC data is now required as a standard deliverable of responses to Request for Tenders (RFTs) and is used in the tender evaluation process. Recent experience in the application of LCC has been gained with Australia's Minehunter Coastal project. This was the first RAN project to formally ask for LCC information as part of the RFT. Tenderers were required to provide LCC information using a designated software package (Cost Analysis and Strategy Assessment - CASA). However, it was recognised that obtaining all the data required to generate valid information from this model might not be feasible. Therefore tenderers were also asked to provide a subset of the data which could be analysed by the Project using a spreadsheet.

Obtaining sufficient data from each tenderer did prove difficult for a number of reasons. These included the reluctance of potential sub-contractors to provide detailed, commercially sensitive data prior to contract award, the requirement for payment for any data supplied and in some cases, non-existence of certain elements of the requested data. To improve this process for future acquisitions, the formation of a working party, comprising both Government and industry representatives, is presently under consideration.

**Computer-Aided Acquisition and Logistic Support (CALS)**

Computer-aided Acquisition and Logistic Support (CALS) is a business strategy to enable the integration of digital technical information for weapon system
acquisition, design, manufacture and support. The purpose of CALS is to improve industry and Defence productivity and quality, and thus improve supportability, military readiness and combat effectiveness.

Current Defence policy mandates the production of technical and support documentation to CALS standards for all new acquisition projects unless cost benefit analysis proves it would not be cost effective to do so over the life cycle. In addition, all new Defence logistics and publishing systems are required to have the capability to receive and transmit information in the standard CALS format.

Defence has adopted a uniform policy on CALS, based on projected cost benefits, the mandatory US requirements, Defence objectives for better life-cycle support, the commitment to EDI in the commercial world and the opportunity for standardisation in Defence given the activities already underway.

The realisation of the CALS objectives will result in qualitative and quantitative benefits being accrued by Australian industry and the Defence Organisation, although implementation will involve some costs.

One of the basic concepts of CALS is to acquire technical data in common industry standard digital formats. By having common interface standards with industry and within Defence, data can be easily shared without the introduction of non-value added activities. Data can be uploaded from industry and become instantly useful. Data can be shared or routed to functional areas for value adding. Data can also be downloaded to industry in standard formats and contractors can share data with other contractors or subcontractors. CALS will provide for an effective transition from current paper-intensive processes to the efficient use of digital information technology in support of weapon system life cycles.

A Defence CALS Plan has been endorsed by the Defence Steering Committee — CALS, and is the foundation stone upon which the Services will base their CALS implementation plan in a coordinated and integrated manner. Defence and Navy CALS Project Offices have been established to fulfil the planning and facilitator roles.

CALS compliance to varying degrees is now included in a number of Navy Acquisition Projects including:

- Collins Class Submarine;
- Minehunter Coastal (MHC);
- Australian Frigate (AF) and ANZAC Ship Engineering Data Imaging;
- ANZAC Maintenance Planning system;
- Hydrographic Ship (HS);
- Mine Warfare Systems Centre (MWSC);
- NAVCOMMSTA Relocation Project;

- Offshore Patrol Combatant (OPC); and
- Active Missile Decoy Project.

CALS and CALS related initiatives presently in place or planned shortly are:

- Development of CALS work station functional specification for Project Office Environment;
- Proposed placement of DEF(AUST) and single service standards on CD-ROM;
- AF Planned Maintenance System on CD-ROM;
- Digitisation of FFG 01-04 drawings;
- Digitisation of DDG drawings;
- Shipboard LANs; and
- Navy Information Network (NIN).

CALS acquisition guidance has been developed and promulgated in Defence logistic and purchasing manuals. The Defence Project Managers Guide to CALS Implementation has been developed for use by project and ILS managers and new tri-service ILS courses will incorporate comprehensive CALS training.

An Australian Defence Documentation Type Definition (DTD) and Output Specification (OS) based on the MIL-D-28001 DTD is being developed by consultants to meet the requirements of Defence standards for technical documentation. The DTD and OS will be installed on Defence publishing platforms and be provided to contractors as Government Furnished Information (GFI).

The Navy ship handbook publishing system, HANCOM, has been upgraded to Interleaf 5 for CALS compliance. With HANCOM, Navy is able to produce fully CALS-compliant documentation with a functional CALS laboratory capable of originating, receiving and validating DTDs and document instances. The Navy CAD system CATIA is capable of creating and receiving CALS compliant engineering drawings.

**Electronic Data Interchange (EDI)**

Even though extensive use is made of information technology within Defence, business transactions are still usually conducted using paper as the information medium. EDI is seen as one way in which the flow of paper can be minimised, leading to more effective and efficient use of resources. More favourable terms and conditions with suppliers can be negotiated because of reduction in overheads and timely payment for goods and services provided.

The capability now exists, via an interface between the Defence Management Information System (DEFMIS) and the Department of Finance, to direct credit suppliers' bank accounts using an EDI link. This will expand gradually to include placement of purchase orders, processing of invoices, and other business transactions.
**Availability Definitions**

**Operational Availability** ($A_0$)

MDT = Mean Down Time covering preventative and corrective maintenance, administrative and logistic action

$$A_0 = \frac{MTBM}{MTBM + MDT}$$

Note: The parameter used to define $A_0$ requirements must be clearly stated. $A_0$ for total life of a system would include depot overhauls, refits etc. $A_0$ for a specific mission period would have a completely different requirement.

**Availability for Sea** ($A_S$)

$$A_S = \frac{Whole\ Ship\ Life - Non\-operational\ Time}{MTBM + MDT}$$

Where: Non-Operational Time = Refits + Preparations + Trials

Alternatively, Availability for Sea may be defined as the sum of Ship Planned Up Time (Operating Time plus Standby Time) plus Restricted Availability Periods (AMPs/SMPs, Leave, etc). This may be represented as:

$$A_S = \frac{SPUT + AMPs + SMPs + Leave}{Whole\ Ship\ Life} \times 100$$

Where: $SPUT = Operating\ Time + Standby\ Time$

Operating Time is defined as the time when a ship is actively performing the mission designated by the Maritime Commander. Standby Time is the period of time during which a ship is required to be in a condition to perform its mission but is alongside for any period other than AMP, SMP or leave.
Alliances and Agreements

One necessary strategy for self reliance is the establishment of international alliance and agreements since:

"The self-reliant Defence of Australia is set within our region of strategic interest. Our self-reliance is, however, heavily dependant on sources of supply and logistics support from nations outside our region. In this regard, the Defence of Australia, 1987 states that our policy of self-reliance is pursued within a framework of alliances and agreements. The most significant of these is with the US which is not in our area of strategic interest. Co-operative Defensive Logistics Support Agreements have been established with the Australian objectives of:

- providing assurances for through-life support for equipment;
- providing access to logistics systems;
- giving the ADF the ability to acquire resources to redress any shortfall in the ADF inventory or a capability shortfall in Australian industry;
- assisting Australian industry to acquire business or enter collaborative projects through government level contacts or initiatives;
- promoting greater co-operation as an element of overall relationships;
- making firm commitments for the transfer of technical data/technology for the logistics support of equipment purchased from either Party but subject to national laws and regulations."  (Hunt, 1991, p.18) "Strategic Review 1993" further reaffirms the importance to Australia of maintaining alliance relationships:

"Defence depends heavily on Australian industry for the provision of goods and services. But self-reliance does not mean self-sufficiency. Beyond the combat and combat-related needs of our defence capability, Australia will not need to carry out all tasks itself. There are also limits to the extent to which Australia can divorce itself from overseas support, particularly in important aspects of new and complex technology. Complete self-sufficiency would be unachievable and would divert resources at the expense of capability. Hence, as well as developing local support capabilities, ensuring a capacity to draw on support from overseas is an integral part of our strategic planning."  (Dept. of Defence, 1993a, p.53)

This formalises the Australian Government's commitment to maintain Defence logistic interoperability with its allies through a structured series of agreements, some of which have treaty status.

Conclusion

The Australian Government's drive towards self-reliance has resulted in significant changes to the way the RAN conducts "cradle to the grave" logistic support. This new philosophy has resulted in the resurgence of in-country capital acquisition programs and the associated logistic challenges applicable to the parent navy role. Some of these challenges include doctrinal changes in design, availability, configuration and maintenance management. These challenges must be met in an environment in which the Government has emphasised the need to maximise the interoperability of equipment and systems within the ADF — and with industry, allies and regional neighbours where it is cost-effective or of marked operational benefit for the defence of Australia.

The RAN is developing a number of strategies to achieve Government objectives in Defence logistics, the most significant being the Support Centre concept. To enhance the decision making process and successfully meet the logistic challenges of a self-reliant navy capable of maintaining interoperability with allies and developing stronger links with the international defence community, a number of logistic tools are being utilised. Logistic Support Analysis (LSA), Computer-aided Acquisition and Logistic Support (CALS), Life Cycle Costing (LCC) and Electronic Data Interchange (EDI) are the means by which the RAN will move its logistic practices into the 21st century.

Captain Michael Francis Horne joined the RAN in 1964 and since completing initial training as a supply specialist has served in a wide cross section of Navy and Defence postings including exchange service at the Royal Navy Supply School.

Sea service has included three Supply Charge postings in DEs and DDGs which culminated in his promotion to Commander in 1981. Since then he has served on the personal staff of Chief of the Defence Force (Joint Operations and Plans), the staff of the Maritime and Support Commanders (as Deputy Fleet Supply Officer Logistic Plans) and Assistant Chief of the Defence Force (Development Division). Promoted to Captain in January 1990, he has held the two senior logistic policy positions in Navy Office, Director of Logistic Services and Director of Naval Logistic Policy in which he is currently serving.
The Cultural Heritage Potential of Army Training Areas

By Captain R.G. Sharp, RAE.

"...Australians are concerned about their environment and they recognise that the protection and preservation of Australia's cultural heritage is as important as the protection of its natural heritage..."

Introduction

Today, Australian society places a significant emphasis on heritage which has evolved from our ancestral need to understand and learn from the past. Often this heritage resource is represented by the impacts that have occurred to the natural environment as a result of human interaction. Such resources which are referred to as cultural sites or places may include oral, ceremonial or documented beliefs, activities or events from the past. They may be the eroded remains of a shell midden, an overgrown vineyard, the ruins of a homestead or an unexploded military ordnance, but ultimately they are all resources which signify a past cultural association with the landscape.

Over the last 50,000 years, much of the Australian landscape was influenced by the presence of Aboriginal Australians. This changed once European settlement commenced in 1788 and now much of Australia's landscape has been arguably destroyed by cultivation and clearing, grazing, building construction and soil erosion. Both Aboriginals and Europeans have impacted on Army controlled land prior to its acquisition although military presence also continue to provide impacts given such training activities such as armoured fighting vehicle manoeuvres, weapon firing and combat engineering. Army is however aware of these impacts and since the acquisition of most training areas, Army has attempted to mitigate these impacts by adopting counter measures.

Army Training Areas

Army manages a selected portion of the Australian environment which includes a diverse range of ecosystems from deserts and forests through to whole water catchments and coastal foreshores. Overall, some 1.3 million hectares of Australia's landscape are owned or leased by the Department of Defence for Army's use. This ownership stems from a requirement for land on which to undertake training. In considering Australia's military past, only selected parts of the environment have been acquired or utilised by the Army. Often, this use has been influenced by a need for a specific terrain type, that is, a training area which has grasslands and woodlands or rainforests and beaches. Training areas have needed to provide a topography which allows a combat force to practice and perfect procedures without interruption. Today, much of the terrain which makes up Army training areas is considered relatively undisturbed and subsequently there exists the potential to provide valuable information about the past. Evidence from this past, if interpreted correctly, could enhance the sustainability of a combat soldier. Army has recognised this potential and often supported the view that indigenous Australians have an unsurpassed knowledge of the Australian landscape.

Army regularly collects information concerning native or bush foods from Aboriginal communities which ensures that such knowledge is not lost and that modern Australian soldiers are better equipped to survive in the remote northern regions of Australia. Given that much can be learnt from past societies and cultures and their use of the landscape, Army still needs to gain further knowledge and understanding of Australia's cultural landscape.

Cultural Heritage Management

From its inception, Army has always recognised and embodied certain values and ethos such as preserving the memories of conflicts, traditions of war, and the culture of the military. The legend of the ANZAC has reinforced this approach with the military stereotype being the digger or infantryman. Collections of war memorabilia and captured equipment from overseas, such as those displayed at the Australian War Memorial, have always been more important to the Army than the physical conservation of military sites within Australia. Army has also promoted military traditions, recorded historical events, and has recognised the importance of differing cultures.
Such is the basis for teaching military history and in understanding the defeats and victories of past battles.

Today, this commitment still remains embedded into its philosophy and from this flows its goals to develop its people, ethos and values. In considering the past, Army sees itself as steward of the nations’ resources from which its mission of promoting security directly contributes to the conservation of Australia’s heritage. However, the dilemma for the Army is should it protect sacred Aboriginal sites in preference to rustic colonial homesteads and disused Second World War facilities?

Over the last two decades, Army’s management of the environment has progressively changed. Today there are checklists which identify certain aspects of cultural heritage for training areas whether it be Aboriginal, European or Military. This shift in attitude is reflected in the belief that Army owes a great deal to Aborigines and must remember their services during the Second World War in which they directly contributed to the success in defending northern Australia. In 1991, cultural resources was emerging as an important issue for Army. Army needed to convince the community of its conservation intentions and from a cultural heritage perspective proposed a number of options which included:

- the restoration of sites damaged after exercises; and
- the preservation of significant sites on training areas.

Also in 1991, an Army Service Paper identified the need for Army to become more active at the national level regarding environmental issues while other sources have highlighted to the Army the need to incorporate cultural groups such as Aborigines into the decision making forums associated with the management of training areas.

The philosophy of cultural heritage management is that sites or places are scarce, non-renewable and valuable, consequently, there is an identifiable need for Army to reformulate its present approach to training area management. If as a land manager, Army adopts a “best practice” approach which involves minimal destruction and physical protection, it will be in turn inheriting what are defined as the basic principles underlying cultural heritage management.

**Training Areas or Islands?**

We know that Army’s land resources comprise an area exceeding one million hectares, therefore it is not surprising that many of these training areas are located near rural townships or metropolitan areas and surrounded by other land uses such as agricultural, forestry, mining, recreational areas and conservation reserves. To date, little research has focused on the cultural consequences of heritage landscape fragmentation compared to that for biological habitats.

In Australia, there are few land systems remaining which ensure through management the conservation of both natural and cultural resources. Furthermore, there are few, if any, public lands which have not already been influenced by human activities such as fire, mining, settlement or physical and administrative boundaries. Army training areas however, offer the potential as “cultural heritage islands” given the limited impact of military activities and that such landscapes remain off-limits to the public. At present, we know that within many protected areas such as national parks, there exists a lack of knowledge and understanding of the importance of cultural sites and places and in a similar way, Army training areas are just another example of this conflict between archaeology and ecology. They are landscapes where cultural sites or places have been in part accidentally preserved from impacts and today complete the missing links in our understanding of the past and offer a well preserved open air museum depicting past cultural activities in a natural setting.

Management into the 21st Century

In conclusion, the management of cultural heritage sites and places is always difficult since their significance often depends on their representative status. If Army as the custodian of a portion of Australia’s landscape is to achieve sustainable training area management, it must recognise the diverse impacts cultures have had on the natural environment and incorporate heritage values into its corporate philosophy and policy making processes.

**NOTES**

Training areas contain a considerable amount of evidence of past Aboriginal and European occupation which in many cases is in a condition better than that found in protected areas such as national parks.

Captain Richard G. Sharp joined the Army in 1987 as a Direct Entry Officer with specialist qualifications in natural resource management. After an initial period of training within the Army’s Corps of Engineers, he has successfully occupied a number of key appointments with Land Command, Army Office and Headquarters Australian Defence Force. Currently he is the Environmental Planning Officer within the Army’s Corporate Planning Branch.

**BACK COPIES**

If any reader has copies of the Australian Army Journal 1949 – 1955 that they no longer want, we would love to have them back in our care.

Issues most sought after are:

Nos 2, 3, 6, 7, 9, 13, 14, 18, 20, 22, 25, 26, 28, 30, 31, 35, 42, 43, 56, 57, 60, 61.
Understanding the Office of Governor-General of Australia

By the Right Honourable Sir Zelman Cowen, AK, GCMG, QC, DCL

The national debate on the future constitutional shape of our country, whether as a continuing constitutional monarchy or as a republic, leads me not to argue a case on one side or another, but so that you may have some picture of that element in our polity, at least as perceived by one who has occupied the Office. I was the nineteenth, and the sixth Australian-born and resident Governor-General, from 1977-1982. It may be useful to have some appreciation and understanding of the Office as it has evolved over the near-century of the Commonwealth’s existence.

First, because of the Institution’s specific interests in defence, let me say something of the military aspect of the role of the Governor-General. Section 68 of the Commonwealth Constitution provides that “the command in chief of the naval and military forces of the Commonwealth is vested in the Governor-General as the Queen’s representative”. My successor in the office, Sir Ninian Stephen, explored the meaning of that provision when he spoke at a graduation ceremony at the Joint Services Staff College some years ago. On the face of it, he said, the Governor-General, has “all the panache of a Boulanger, a general on a white horse, at the head of his armies with standard unfurled”. Neither my successor nor I saw himself in such a description of the Commander-in-Chief. Sir Ninian’s research led him to consider a variety of views ranging all the way from the claim that as Commander-in-Chief, the Governor-General was “no more than a glorified patron” of the armed forces, to one which rather dramatically saw him as the ultimate possessor of the command function — or something like that. Sir Ninian concluded that with the evolution of institutions of responsible government, it was clear that a governor was not intended to have substantive powers of command. The debates in the Australian constitutional conventions of the 1890’s in which the Commonwealth Constitution was debated and drafted show, pretty clearly, that the title of the Governor-General as Commander-in-Chief was intended to confer titular and not substantive command in chief. At the same time the role was seen as giving expression to a special and distinctive relationship between the Governor-General and the armed forces of the Commonwealth. In Sir Ninian Stephen’s words it is “a close relationship of sentiment, based neither upon control nor command but which in our democratic society expresses on the one hand the nation’s pride in and respect for its armed forces and on the other, the willing subordination of the members of those forces to the civil power.”

I have many recollections of the strength and warmth of feeling in the armed forces for the Governor-General as Commander-in-Chief and I have many special and distinctive memories of it. Over the years in office there were visits to service institutions for a wide variety of purposes, and, from time to time, to take part in military exercises. My wife has a favourite picture of me in a Leopard tank, smiling hugely and looking like a cat given unlimited cream, and somewhere among my possessions I have a licence to operate such a tank. I doubt whether it has any validity, and I am very unlikely to put it to the test, but I was pleased to receive it.

As I look back over the record of speeches and travels, there were many service occasions. There were the graduation ceremonies of the various service colleges and other military courses, there were presentations of colours, banners and guidons, there were awards for service competitions like the Duke of Gloucester’s Cup, there were attendances at service dinners and functions, as well as at various RSL and other like occasions. It was really quite impressive to look back at and to tally the number of speeches and functions which had a service connection.

Apart from such activities and ceremonies, there were other links with the services. In the household of the Governor-General there are serving military officers: the Comptroller of the household and the Aides. The Comptrollers in my time were successively army and navy officers of Lieutenant-Colonel and Command rank. The Aides were of the rank of Captain or equivalent, and there was one from each of the three services, each serving for a year with a staggered succession. They were all career officers, and I took the view, with which I hope the Chiefs of Staff concurred, that these were significant appointments worthy of special attention in that they gave the selected man (and it happened that in my time they were all men) a view of the world and a distinctive social and educational experience which stood him in good stead when he returned to regular service duties,
and made his way up the service ladder. The experience would serve him well if he were likely to progress to the higher service levels. Of course it cannot be easy to identify the "flyer" so early in a service career, but so far as it was possible, I hope that the post of aide to a Governor-General was seen as valuable in this educational-social experience role. I do not know whether it was possible to achieve what I hoped for, but among the aides were men of diverse abilities who, after accustoming themselves to an unfamiliar and very demanding role, derived significant benefit, experience and even enjoyment from the job.

All of this tells a story of the links of the Governor-General with the military side. I believe that the association was valued by the services who, as Sir Ninian Stephen put it, recognised the "quite special relationship that exists between the Governor-General and the armed forces of the Commonwealth".

Let me now speak more generally of the Office of Governor-General. The Australian Constitution provided that the Queen should be Head of State. She was to be represented in the Commonwealth by a Governor-General who performed Head of State functions as her representative and in accordance with the Constitution.

Over the nine decades of this century both offices, the Monarchy and the Governor-Generalship, have undergone significant change. In 1901, Australia was internally self-governing, but was still in many respects of colonial status, acknowledging allegiance to a Monarch who was Queen of the entire Empire. Early in the century, Australia, in company with a small number of constitutionally advanced colonies, achieved special status as a self governing dominion. This was reinforced by her participation in the first World War, and in the inter war years the status of Australia and her sister dominions was redefined at a great Imperial Conference in 1926 to emphasise a relationship of equality with one another and with the United Kingdom. The essential link in this new structure was seen as common allegiance to the Crown.

Following the second World War, major changes took place within the diminishing empire and the expanding Commonwealth of Nations particularly in the passage to independence of former colonies led by India, Pakistan and Sri Lanka. Theirs was a different colonial history; to India independence was bound up with republican status. So in 1949 the question was posed whether India might be a member of the Commonwealth as a republic, and the answer given at a meeting of Prime Ministers of Commonwealth countries in that year was that she might do so. So it was that as other colonies came to independence they opted in a majority of cases, either at that time or later, for republican status. So it is that in the contemporary Commonwealth, Australia is one of a substantial minority among some 50 states in acknowledging the Queen as Head of State.

Further it was agreed that individual Commonwealth states retaining the Monarchy might redefine the style and titles of the Monarch. Australia did so in 1953 and 1973; the Queen is Monarch by separate and distinct titles in all those States in which she is constitutionally Head of State. In examining these arrangements, it can be said that there is special significance in the Queen's role as Queen of the United Kingdom; there, as part of a long history, she performs her Head of State role in person. It is impractical therefore for the Queen to undertake more than an occasional visit to each of the other States of which she is Head. To assure the adequate discharge of her constitutional and ceremonial duties in these states, she must have a representative permanently in place to perform those duties. Hence the role of the Governor-General assumes importance.

That role has changed over the course of this century. To take our case, the Governor-General was appointed by the Monarch at the beginning on the advice of the British Government; he came from the United Kingdom and returned to it at the conclusion of his term. He saw his responsibilities as twofold: in one aspect performing constitutional duties on behalf of the Queen; and another as the protector of British and imperial interests, acting in this aspect on behalf of the British Government.

Over time, there was increasing pressure from Australian Governments for a voice in the choice of a Governor-General and after the end of World War I there were pressures to redefine the Governor-Generalship in particular aspects. So in 1926 it was agreed at the Imperial Conference that Governor-Generals should stand in relation to their governments in the same relationship as did the Monarch in relation to the United Kingdom Government. The clear point was that the Governor-General should not act at all as representative of the British Government; its interests should henceforth be the concern of a diplomatic agent, styled the High Commissioner for the United Kingdom.

As it happened it was an Australian initiative which established the rule for the choice and nomination of the Governor-General. In 1930, on the retirement of a (British) Governor-General, the Australian Government resolved to recommend to King George V, an Australian-born and resident citizen, Sir Isaac Isaacs to be Governor-General. At the time, Isaacs was Chief Justice of the High Court of Australia; he was the son of poor immigrants and had had a brilliant
career in the law and politics. The King was resistant to the appointment of a local man, and the standing of the Australian (as contrasted with the British) Government to make the recommendation was challenged. The issue was highly controversial in London and Australia, but the Australian Prime Minister, J.H. Scullin, stood his ground and the King made the appointment, albeit reluctantly. The entitlement of an Australian (or other Commonwealth) Government to recommend the appointment of a Governor-General to the King was affirmed by an Imperial conference in 1930. So it was that the modern Governor-Generalship was put in place. It did not follow that all Australian Governor-Generals must henceforth be Australian citizens, and it was not until the mid 1960s with the appointment of Lord Casey, that a continuing practice of nominating Australian citizens was adopted.

I was the nineteenth Governor-General; I was appointed in 1977 in succession to Sir John Kerr whose action in November 1975 in dismissing the Whitlam Government provoked a constitutional crisis and brought a visibility to the Office of Governor-General which it had never before had to any comparable extent. I was appointed on the recommendation of the Prime Minister, Mr Malcolm Fraser.

A distinguished Australian historian has written that in practical terms Australia is a “crowned republic”, since in practice all the significant powers and functions of the Queen are exercised by an Australian Governor-General whose sources of appointment and authority are in fact Australian. Indeed the critical functions are discharged by him: this was illustrated by what was done in 1975 in respect of the dismissal of Mr Whitlam. Sir John Kerr in his book Matters for Judgment made the point that the action was his; that he did not consult with or inform the Queen, though he advised her immediately after he had acted. So he wrote:

"I did not tell the Queen in advance that I intended to exercise these powers on November 11. I did not ask her approval. The decisions I took were without the Queen’s advance knowledge. The reason for this was that I believed if dismissal action was
to be taken that it could be taken only by me and
and that it must be done on my sole responsibility. My
view was that to inform Her Majesty in advance of
what I intended to do and when would be to risk
involving her in an Australian political and consti-
tutional crisis in relation to which she had no legal
powers and I must not take such a risk."

The power which Sir John Kerr exercised is styled
a “reserve” power; that is to say a power exercised by
the Governor-General in his discretion and not on the
advice of his Prime Minister. Such powers are com-
paratively rare, and in this case bitterly contested.
There are a few: the power to choose a Prime Minister
in those circumstances in which the configurations of
party do not make the choice inevitable, and the
power to refuse a Prime Minister’s advice to dissolve
the Parliament. The definition of the reserve power
has been a matter of debate; it was said that Sir John
Kerr’s exercise of the power of dismissal gave a fillip
to the republican cause. The change to a republic
would not, of itself, resolve the issue, however. With
a president in place as Head of State, the problem
which gave rise to the exercise of reserve powers
would still remain and have to be faced. In Sir John
Kerr’s case, the problem in fact arose out of the rela-
tionships between the two Houses of Parliament.

The events of November 1975 have focussed atten-
tion on the exercise of constitutional and political
power by a Governor-General; the critics of its exer-
cise in defining the acceptable role of a Governor-
General frame it in terms that it should be “purely
ceremonial and divorced from the exercise of real
political power”, that he has (or should have) no real
powers “but to open fairs, cut ribbons and the like”.
The language of such people is that of ceremony
and it distracts attention from the fact that by a due
attendance of business of his office, by the exercise of
functions and influence within acceptable limits, a
Governor-General can, in appropriate cases, exercise
an effective influence on the processes of government.

In the Australian context, my own experience of the
workings of the Federal Executive Council illustrates
this. In the Council, week-by-week, the Governor-
General presides, advised and attended by Ministers.
A great deal of governmental business was done,
including the making of regulations, orders, procla-
mations and a wide range of appointments as well as
other diverse governmental business which was
required to be overseen and approved there. Sir Paul
Hasluck who had wide experience of the work of
the Executive Council from two sides — as a Minister
as well as a Governor-General — has written in some
detail about its work, and much of his experience,
which is certainly extensive, corresponds with my
own. The Governor-General can, and I believe
does, play a useful role in requiring clear and ample
explanation for what is proposed.

In my case, having seen and studied the papers, I
would ask questions of officers in advance of Council
meetings to satisfy myself that I understood what
was being done and that it was being done regularly.
I would raise questions with the attending Ministers
in the Council so that they could take into account
the doubts, questions and concerns of the Governor-
General before they formally tendered advice to him.

The Governor-General’s experience in questioning
proposed actions and procedures and in raising points,
as that experience grew, was intended and I think was
calculated to serve the interests of regularity which in
the press of big, busy and complex government, may
not always be assured. As I said in a speech to the
National Press Club in Canberra shortly before I left
the Office in July 1982, such activity and conduct on
the part of the Governor-General allow him to play a
useful and it may be, an important role in government
which is consistent with a meticulous respect for the
principle that the Governor-General acts on the
advice of ministers.

A vigilant and inquiring Governor-General comes
to be recognised as such in the departments which
have the responsibility for preparing and conducting
substantial government business. This is specially true
in the busy work of the Executive Council; it is true
also of other areas of business in which the Governor-
General plays a part. Approval of a document or of a
course of action which falls within his purview is not
to be regarded as a mindless, unenquiring, mechanical
endorsement.

Further, let me say that the description of the ceremo-
nial role of the Governor-General as “chief ribbon
bestower and chief ribbon cutter” tends to diminish
the significance and often to obscure the character of
what is done in this demanding area of the Governor-
General’s activity. Questions are sometimes raised as
to whether an appointee is “too well qualified”, as if
to say that the office calls for no substantial qualities
of mind. Once again, my experience corresponds with
that of Sir Paul Hasluck. What was asked of me in a
wide range of activities made a full call upon my
physical and intellectual capacities.

As with the Monarchy so too with the Governor-
General, much time and energy and care go into the
performance of a wide range of non-constitutional,
non-political and in this sense ceremonial duties and
activities. This is what the famous nineteenth century
writer, Walter Bagehot spoke of as the “dignified”
role of the monarch. If observers are pleased to call
this “ribbon bestowing and ribbon”, cutting let it be
recognised that the bestowing of ribbons is a recogni-
tion of significant and diverse community service by
individuals and that is no poor thing, while the many
ceremonies and openings (the ribbon cutting) are
associated with events in the life of the nation from
the broadly national to the local. They take the
Governor-General to many places in a vast nation
continent; they lead him in speech to an interpreta-
tion and identification of many significant activities, issues
and occasions. The openings, the meetings in which
the Governor-General participated were not in-
frequently those of national and international bodies,
of professions, industries, of specialists, of academic
bodies, of learned societies.

From the earliest days of the Commonwealth’s
existence, the Governor-Generals have recognised
the importance of travelling through the nation and
have been clear about the reasons. Lord Hopetoun,
the first Governor-General, saw this as providing a
needed national focus in the early days of Australian
federation. In an early speech he promised to demon-
strate “to the many that they are living under one
central government”. Right up to the present day his
successors have followed this course and for the same
reasons. At an earlier time it was done, often arduous-
ly, by slower means of transport. In our day, jet air-
craft annihilate distance. While this may relieve the
rigour, it makes possible an ever-expanding oppor-
tunity for travel all over the country.

Much time and energy go into the discharge and to
the preparation for the discharge of such duties and I
believe that it is the case that the Governor-General,
like the Monarch, makes his major contribution
through the continuing and the committed perform-
ance of these duties. I believe that through this work,
the Governor-General offers encouragement and
recognition to Australians, many of whom may not
be very powerful or visible in the course of daily life
and to the efforts of individuals and groups who
work constructively to improve life in the nation
and community. Sir Paul Hasluck has said that
Australians both expect and appreciate statements by
a Governor-General on matters of current concern at
a level different from that of party political contro-
versy, and I shaped what I said in accord with that.
Knowledge, experience and capacity were constantly
tested and called upon in responding to what was
asked and expected of me. As well I saw, as did
Hopetoun in the beginning, that a major role was per-
formed by the Governor-General in the discharge
of a large number of functions all over Australia. The
responses were often quite remarkable and were
certainly moving. It cannot easily be better put than
in Hasluck’s words, that the Office of Governor-
General is the highest single expression in the
Australian governmental structure of the idea that
Australians of all parties and walks of life belong to
the same nation. Recognition of this places heavy
burdens and responsibilities on the Australian who
holds the office.

In the discussion of the republic, I have often won-
dered what this Australian and Australian nominated
Governor-General, what I would have done which
would have been significantly different had he been a
constitutional president of an Australian republic. Not
much, I think, in substance.

In 1993, this Blamey Memorial Oration was delivered by the Right Honourable Sir Zelman Cowan, AK, GCMG, GCVO, QC, DCL
at the RUSI in Melbourne. The subject was “Understanding the Office of the Governor-General of Australia”.


The Western Front was a continuous line of trenches stretching 450 miles from the Swiss border to the Belgian coast. In France and Belgium, it was the scene of the most prolonged and intensive fighting of the First World War.

The Australian Imperial Force fought the first battle of the Somme and experienced one of the bloodiest clashes of the War, sustaining 30,000 casualties. In so doing, they also weakened the German defences and hastened the end of the War.

Seventy five years later, a group of war veterans and widows returned to the Western Front to pay tribute to those who fought and died there.

* Australians on the Western Front* is an account of this pilgrimage and of the battles it commemorated.

*It is available from the Australian Defence Force Journal at $25 per copy.*
Did the United Kingdom Abandon Australia Between 1939-1945? Did Australia Abandon the Imperial Connections in 1942?

By Harriet Pointon, Department of Defence.

Introduction

World War II was a time of turmoil for the entire world, not least Australia. Trying to find its own identity under the watchful eye of its “mother country” Australia struggled to be accepted as a separate entity and fought long and hard to encourage Britain to accept Australia as a near independent nation and to take her concerns seriously. Australia’s concerns during this era including the increasing threat from Japan and the disinterest Britain was paying to this particular issue.

During Australia’s formative years as a fledgling colony imperialist sentiment and allegiance to Britain ran high amongst the population. Support of Britain in empire operations was considered to be in Australia’s best interests in the long term as Australians thought they would be able to depend on Britain to reciprocate. Britain’s priorities were, understandably, different from Australia’s and a conflict of interests between the two Allies ensued. While Australian troops were involved in campaigns overseas in defence of the empire it became increasingly obvious to Australians that their homeland was under threat from the advancing troops. Was Australia entitled to expect assistance and protection from Britain? Did Britain owe a “Duty of Care” to Australia? What were Australia’s and Britain’s priorities during 1942? Was the Singapore Base an adequate form of protection from Britain? The examination of these questions may provide answers to the two main issues under consideration.

Was There an Agreement Between Australia and Britain for Mutual Military Support or Protection? Was Australia Entitled to Expect Assistance and Protection from Britain?

One of the many and varied reasons Australia contributed troops to aid in Britain’s struggle against its aggressors was because in return Australia expected the British Government to provide assistance in the form of help from Royal Navy and British troops if they were needed. Australian troops were sent overseas to fight in Imperial campaigns in the Mediterranean and many other far flung corners of the globe. It was seen as being in Australia’s interests to support the British conflicts and the decision to send troops to the Middle East was essentially part of the Imperial defence concept, whereby Australia’s fate would be determined by the outcome of a British led campaign. This form of forward defence was a primary reason Australia was involved in campaigns so far away from her home shores. If Britain lost to Germany then Australia was sure to suffer a similar fate.

So was Australia entitled to expect aid from Britain just because Australia contributed to Imperial campaigns? Did Britain owe a legal or moral obligation to come to Australia’s aid when asked? Perhaps there was no written agreement yet maybe an implied or verbal agreement existed between the two nations? An article in *Army Quarterly*, 1935, states that there was an implied obligation on the part of Britain to assist Australia, should she be in danger; and assurances had been made to Australia by the British that in the event of war with Japan, “the Admiralty would make such dispositions as would enable them to offer timely resistance to either a serious attack upon Singapore or to the invasion of Australia and New Zealand.”

The argument may be examined in a number of ways, however, an interesting way to explore this issue may be through the use of either contract or negligence law. Was there a contract between Britain and Australia for Australia’s protection? Was Britain negligent in respect of the defence of Australia?

Contracts can be written, verbal or implied and consist of three elements, agreement, consideration, and intention to create legal relations. Did Australia and Britain enter an agreement to contribute to each others defence in a reciprocal arrangement?

An agreement is the distinguishing feature of a contract and a contract may not exist without one. In this case an agreement may have been implied through the actions and verbal assurances of both countries concerned. Assurances that Britain made pre-war, concerning Singapore to a large extent
affected Australians decisions on force deployment for the first two years of the war. Churchill insisted that if Australia was seriously threatened then the British Government would not hesitate to “compromise or sacrifice” their Mediterranean position for Australia’s sake. Churchill went as far as to say to Menzies in August 1940:

“If however, contrary to prudence and self interest, Japan set about invading Australia or New Zealand on a large scale, I have explicit authority of Cabinet to assure you that we should then cut our losses in the Mediterranean and proceed to your aid, sacrificing every interest except only the defence position of this island on which all depends.”

By Britain making such assurances, and Australia’s actions in committing troops to overseas theatres, I would argue, that there was in fact an agreement or contract between Australia and Britain and that such a contract gave Britain a legal, as well as moral, obligation to defend Australia. Britain implied that she would defend Australia and Australians believed they were part of a reciprocal arrangement. It is arguable that the Australian Government was too trusting of the British Government and should have questioned and examined in more detail, British promises and strategies. This however, is an issue which will be discussed later.

Having established the first element of a contract between the two countries, an agreement both implied by their actions and given verbally, it is now necessary to fulfill the second element of the law of contract, namely the consideration. Consideration is any reciprocal exchange of value between the parties privy to the contract. Did Australia and Britain exchange anything of value? Yes, not only did the two countries exchange trust in one another to aid each other in the defence of their land but they also exchanged human resources in the form of military forces, as well as equipment, logistics support, and supplies. For example the participation of Australian flyers in the Empire Training Scheme, and the British presence at Singapore. When proving the element of consideration it is important to consider how effective these forces were, only that they were part of a reciprocal exchange between the two countries. This mutual exchange of valuable resources means there was consideration between the two countries.

“Security against an invasion relied as it has always done on Britain’s promise to reciprocate Australian cooperation in a European conflict with the dispatch of a fleet to the Far East.”

The third and final element in the proving of consideration is Intention. Did Britain and Australia intend to create a contract. I would argue that in times of such need it was in both parties interests to be part of such an agreement where resources could be drawn from the other party. I believe from their actions the two countries had every intention of forming a “partnership” or agreement to aid in their mutual protection.

Having proven the three elements of contract law it can be deduced that a contract for mutual military support existed between the British and Australian Governments. Having proven a contract it may be examined as to whether or not Britain was negligent in its agreement to support or aid in Australia’s defence. Did Britain fulfil its part of the bargain, did it adequately aid in Australia’s protection?

There are three elements that need to be proven when establishing a case of negligence, first a duty of care must be identified, then a breach of contract and an injury must be proved. Did Britain owe Australia a duty of care?

Did Britain owe a duty of care in its protection of Australia? Yes. Britain was part of a contract which dealt with mutual support and protection of the two countries. Australia should have been able to rely on Britain to be honest and forthright and to take every possible course of action to protect Australia.

Did England breach its contract to Australia? I would argue that Britain did not breach its contract to aid in the protection of Australia. Even if Britain did breach this contract Australia would also have been guilty of contributory negligence for its lack of questioning of Britain’s promises. Britain had priorities during this time of conflict, as did Australia. It was not the fault of either country that these priorities were not the same. As the position in the Pacific region became more tense Australia tried to draw Britain’s attention to the increased Japanese threat in the region, yet Britain seemed disinterested.

“Throughout December the Australian Government became increasingly worried and then alarmed at what appeared to it to be complacency and sometimes disregard of the dangers in this theatre and an inability to appreciate fully Australia’s claims for reinforcements and supplies.”

Britain’s priorities were not in the Pacific but in the European region but concern in Australia over the Japanese threat grew and priorities for Australia’s defence forces began to shift closer to home. Menzies did hesitate about sending Australian troops overseas but eventually gave in after Britain assured him that Japan would remain neutral and that in the event of war with Japan, “the Admiralty would make such dispositions as would enable them to offer timely resistance either to a serious attack upon Singapore or
to the invasion of Australia and New Zealand.9 Australia sent troops and equipment to support Britain. Three Australian divisions, the 6th, 7th, and 9th fought in a number of campaigns in the Eastern Mediterranean. In fact from the time Italy entered the war until Germany surrendered, Australians were fighting in Mediterranean or Middle East campaigns.

"Australia provided more men and equipment for Britain at the expense of its own defence and despite the worsening of its own security situation. The competing priorities of the Middle East and Far East became compelling. Britain chose to take risks with the security of her possessions in the Far East, including Australia, in order to protect her interests in the Middle East."10

Britain made a conscious decision to place the Pacific and Australia as its number two priorities, this does not mean, however, that Australia was abandoned, merely that the British felt that the direct threat they faced had to take precedence over concerns in the Far East. Australia, however, left herself in a vulnerable position by sending troops away to take part in imperial campaigns. Australia was now, more than ever, reliant on Britain for aid.

The British assured Australia that in times of need they would send a fleet to Singapore, yet acted as though they had little intention of doing so. Although there were doubts as to the ability of the Royal Navy to protect the sea routes Australia did not examine this promise too closely and based its defence planning on the assumption that the Royal Navy would be there when needed. According to Day even when the collapse of France looked certain Britain told Menzies that the British intention was to hold Egypt and other interests in the Mediterranean to the detriment of the Far East yet Menzies still placed his trust in Britain.11 Day also states that if Australia admitted that British defence arrangements in the Pacific were inadequate, the responsibility would shift onto the Australian taxpayer and require a greater diversion of resources into defence and effectively, in a time of economic depression, place a large burden on the public purse.12 Britain’s main defensive plan for the Far East involved the Singapore base. It is, however, a matter for contention as to how serious Britain was about the proposal. Was Britain negligent in the way it handled the Singapore base?

By 1919 Britain had realised that a fleet should be maintained in the Far East as a potential threat existed to the sea communications between the United Kingdom and New Zealand, as well as to the security of Britain’s commercial interest in the region.13

Britain was not in the position to maintain a fleet in both the west and the east. A decision was made to hold the British fleet in a central position in European waters from which the Far East could be reinforced. It would be necessary, therefore, to build a naval base in the Far East capable of maintaining the fleet if it was deployed to the region.14 According to Hamill, Singapore was chosen by the United Kingdom as the site for the naval base because “a powerful fleet stationed there would fulfill the multiple functions of protecting India and the Indian Ocean, the dominions of Australia and New Zealand, British colonial possessions in the Pacific, and British trade in the whole of the area east of Suez.”15 The British Government, however, gave the dominions the impression that the base would be created for the sole purpose of defending them, and thus expected significant contributions from them.

At the Imperial Conference of 1923 there was much debate on the subject of the Singapore Strategy. Doubts were expressed as to whether a) the battle fleet could actually arrive at Singapore in time to prevent its fall; b) with the limited size of the fleet whether it could be divided; and c) was the Singapore base creating a false sense of security in Australia and New Zealand?

There is much argument about how aware the Australian Government was as to the shortcomings of the Singapore plan. Although the British deliberately did not tell the Australians everything and in fact openly encouraged them to be reliant on the strategy Australia was perhaps too quick and unquestioning when it came to accepting the proposal.

The British were somewhat less than totally honest with the Australians. The deceptions were many however, according to Chris Welburn, in his essay What was wrong with the Singapore Strategy?, the most invidious half truths told were the reassurances Britain gave Australia that a fleet would be sent to Singapore and would arrive in time.16

"Yet Australia was expected to accept Britain’s statements that a fleet would be provided and refrain from questioning one of the basic tenets of the Singapore strategy. Despite objections from a number of quarters, Australia accepted such blandishments with an air of self deception and blinkered thinking.”17

Surely Australia must then accept responsibility for not questioning and checking Britain’s assurances? Yet Australians wanted to believe that it would work and they would depend on the British. By relying on
the British for defence Australia could, theoretically, enjoy the benefits of being protected by a relatively large defence force (compared to what Australia could provide for herself) for little cost.

**Was Britain Negligent?**

Having discussed the first two elements of negligence, "duty of care" and "breach of contract" it can be established that Britain was not in fact negligent in its defence of Australia. Australia was partially to blame as it did not examine and question British policies, but instead trusted blindly, for reasons previously explained and went along with British plans, until, in 1942 fighting in the Pacific region began to directly threaten Australia. We have not, however, discussed the third and final element of negligence law — injury. Although we have established Britain was not negligent if we say for a moment we found the other way, it would have to be proved that Britain's negligence resulted in injury to Australia. I believe it could not be proven that Britain was negligent in its defence of Australia as no serious injury (speaking in relative terms) was experienced by Australia. Australia was not invaded, and some would argue was never in any immediate danger of being so. Day sums up the situation well when he states,

"The gradual contraction of British ability to defend all her imperial possessions forced her to choose between competing priorities. Despite the rich imperial rhetoric between the wars, the Far East was relegated to a distant third place behind the defence of Britain and the defence of the British interests in the Mediterranean and the Middle East. Britain persuaded Australia and New Zealand to adopt British priorities as their own, dispatching forces to the Middle East on the outbreak of war just as they had done in 1914, defending distant British interests at the expense of their own defence. The benefit to Australia of following in Britain's footsteps had been the chance to skimp on defence, hiding behind the tattered Imperial banner while trying to construct, in the south Pacific, a society in Britain's image."

No, the United Kingdom did not abandon Australia during 1939–1945, the United Kingdom was just in a position of trying to organise its resources to protect as much as possible on three different fronts and this involved prioritising its operations. Britain did not, so to speak, throw Australians to the wolves.

**Did Australia Abandon the Imperial Connection in 1942?**

Australia finally came to the realisation that the Pacific was not Britain's first priority and it was at this time that Australia looked to America for an alliance. It was Curtin's new year message of 1941-42 that stated, "Australia looks to America, free of any pangs as to our traditional links or kinship with the United Kingdom." Australia was changing her priorities from theatres far away from Australia's shores to the Pacific region and her own country which was now under seemingly direct threat. The Australians had not received the support they wished from Britain and were forced to seek safety under the wings of another powerful ally, America, which had been brought into the war through the bombing of Pearl Harbor.

It was not an act of abandonment for Australia to request the return of some of its thousands and thousands of troops which were still serving overseas in 1942. The country was put on a war footing in February 1942 and the need was emphasised for Australia to rely on her own resources in her protection. Curtin's requests for Australian troops to be returned to Australia fell on deaf ears and Churchill authorised the diversion of the returning AIF divisions to protect British territories en route. Curtin resisted attempts to divert the troops but instead agreed to dispatch troops to Ceylon. Curtin also allowed the 9th Division to stay in the Middle East. Even as Japanese forces were moving steadily towards Australia, Churchill refused Curtin's request to send another two divisions to Australia. With such a lack of regard for Australia's safety it is not surprising Australia pressed for the return of its troops and looked for support from America. It was not an act of abandonment, and perhaps not even a statement of independence, but more likely a "flexing of muscle". Australia was making an attempt at breaking away from British policy, and putting her own needs first, which at the time could be best served by an alliance with America. Britain did not try to stop Australia making this change and Churchill, in fact, encouraged it in a communique to Curtin stating,

"your greatest support in this hour of peril must be drawn from the United States. They alone can bring into Australia the necessary troops and air forces, and they appear ready to do so."

**Conclusion**

In answer to the first question, "Did the United Kingdom abandon Australia between 1939 and
1945?" I believe the answer must be NO. Although Britain did not take Australia's concerns over Japan as seriously as Australia would have liked Britain did not abandon its colony. Britain had few resources which, during most of the war had to stretch to defend three fronts. There were more immediate threats to counter than the threat to Australia. Britain, maybe, was wrong in letting Australia believe she was a higher priority, but nevertheless Britain was not negligent in her defence of her colony.

In consideration of the second question, I do not believe Australia abandoned Britain in 1942. Australia had to change her priorities in order to deal with the threat from Japan which was becoming increasingly immediate. Britain was unable to supply the support Australia needed at this time and Australia looked to America. I would argue with the support of Britain. With America looking after the Far East, Britain could concentrate more on her other theatres of war.

Neither country abandoned the other in this time of turmoil. It was just a case of establishing priorities, which, understandably, were different for each country.

NOTES

5. CAB 99/4 para 11.
11. ibid., p 55.
12. ibid., p 11.
14. ibid., p 3.
16. ibid., p 52.
18. ibid., pp 99-100.

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Harriet Pointon joined the Department of Defence in January 1991. She has previously worked in Army Public Affairs and has had articles published in Army Newspaper and Magazine. At present she works in the Directorate of Establishments — Army. She holds a Bachelor of Arts in Communications and is expected to graduate from the Australian Defence Force Academy in December this year with a Masters in Defence Studies.
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AUSTRALIANS ON THE WESTERN FRONT 75th Anniversary Commemoration.

Reviewed by John Buckley

The Defence Department team of Tracey, Isaacs and Coombes have produced another outstanding publication, this time featuring the return of the Australian veterans to the Western Front commemorating the 75th Anniversary of the Australian victories at Mont St Quentin and Peronne in August-September, 1918.

The Governor-General of Australia, The Honourable Bill Hayden, AC. was accompanied by the Return Mission. The Mission Leader was Senator. The Honourable John Faulkner and contained distinguished Service and Diplomatic Staff including the Chief of the General Staff. The participants were groups from World War I Veterans, War Widows, Junior Legatees, Armed Forces and Veterans’ Affairs, supported by Medical and Nursing Teams.

The book is a splendid blending of World War I narrative and illustrations together with the actual Return Mission. Significant events included participation at the rekindling of the Eternal Flame at the Arc de Triomphe and special ceremonies at Villers Bretonneux, Ypres and Peronne. Major wreath-laying ceremonies were held at five Australian Division Memorials at the battlefields.

Admiral A.L. Beaumont, Chief of the Australian Defence Force, has written a most touching and interesting foreword to the book. He is to be commended for continuing to uphold the Department’s dedication to providing such outstanding Defence Publications. If the Defence Department didn’t undertake this important work, a black hole dealing with our heritage and military history would be the result. Also pleasing is the knowledge that both Defence Minister The Honourable Robert Ray and Defence Secretary Tony Ayers support these vital projects which record for all time the wonderful traditions and service of the Australian Armed Forces. The major political parties have also encouraged this work to be done.

This book is only one of a series commemorating the 50th and 75th Anniversaries of Australian participation in major global strategies and operations, upon which so much of our heritage and history is based, ending with a moving description of the return to Australia of the “Unknown Soldier”. In this regard Admiral Beaumont says, “The Western Front Pilgrimage was an appropriate prelude to the entombment of the “Unknown Australian Soldier” in the Australian War Memorial at Canberra. The surge of national emotion was a fitting tribute to the sacrifice of our 100,000 war dead this century, and the youthful and respectful participation of the Australian Defence Force, an apt accompaniment to the solemn occasion”.

The first class narrative harmonised well with the illustrations. Tracey has a marked talent for expressing the right words to describe such solemn and emotional occasions. As well, he is a gifted editor and publisher. Jeff Isaacs’ colourful illustrations and paintings are superb, the best I have seen in any military publication and play a most important and complementary part in the overall presentation. Also discernable is the important detailed research by Irene Coombes.

Proudly printed by the National Capital Printing, Canberra, everything about the book is highly commendable and all those responsible for its publication have contributed to an excellent quality product.

I believe all Australian veterans, including the R.S.L., will be most interested in obtaining copies of this book. Such an important work should be given to all Tertiary and Secondary libraries as another addition to our National History, one which will appeal to all readers — young or old.

Available from the Australian Defence Force Journal, Russell Offices, Canberra, ACT 2600 at RRP $25.00 per copy.


Reviewed by Captain G.J. Harper.

In 1992, at the Australian War Memorial’s annual military history conference, Dr Peter Stanley, Head of the Historical Research Section of the Australian War Memorial, presented a paper entitled “The Green Hole: exploring our neglect of the New Guinea campaigns of 1943-44”. The paper’s main theme was the lack of research being undertaken by military
historians on Australia’s involvement in the New Guinea campaigns of the Second World War. According to Dr Stanley, whose paper was subsequently published in *Sabretache*, the Journal of the Military Historical Society of Australia, the Australian campaigns in New Guinea “are for most of us a green hole”.

Dr Stanley should find *Gona’s Gone!* by Peter Brune a welcome addition to the few recent works on Australia’s military campaigns in New Guinea.

In 1991 Peter Brune, an Adelaide school teacher, published the widely acclaimed *Those Ragged Bloody Heroes*, an account of Australian operations in New Guinea in 1942. His latest work, the monograph *Gona’s Gone!* deals with the taking of the Gona beach-head in November-December 1942 — the first occasion of the war that the Australian Army mounted an offensive operation against Japanese forces. The monograph was commissioned by the Australian Army and will be used as the central prop of the Army’s Military History Program for 1994.

The battle of the Gona beach-head was a hard-fought battle of attrition that saw some of the fiercest fighting of the war. It was also an action in which the Australian soldiers and commanders on the spot were hindered in their task by the serious errors of judgment and undue interference of senior commanders well behind the front lines. The bloody fighting and the mistakes made are vividly recounted in Brune’s monograph.

Brune’s work has many strengths but two stand out above all. His use of oral sources of information in this work is superb. The recollections of Gona veterans have been recorded, carefully sifted by Brune and placed in this monograph with great care. The eyewitness accounts are vivid in detail and make the battle scenes come alive for the reader. Brune’s skill with his use of oral testimony was also a strong feature of *Those Ragged Bloody Heroes*. He has a great talent as a historian for using his oral sources to their maximum potential.

Brune’s second strength is his writing style which is clear, concise and very readable. Both these characteristics ensure that the reading of this monograph is never dull.

*Gona’s Gone!* brings the reader as close to the action as possible and graphically portrays the experience of the soldiers and officers who were forced at Gona to make costly frontal assaults against the Japanese defensive positions. These positions were well fortified, concealed, and commanded excellent fields of fire. They were literally bristling with machine gun nests and sniper posts.

The work does suffer from the faults of most monographs in that they are often too short to do full justice to their subject. Missing from this monograph is an overall strategic and operational framework of the campaign which could have been adequately covered in the opening pages. A separate strategic framework was written as part of the Army’s Military History package in support of *Gona’s Gone!* The monograph also ends somewhat abruptly when it details the disbanding of the 39th Infantry Battalion. *Gona’s Gone!* deserves a better and more detailed conclusion than this.

This book is a welcome contribution to the study of a campaign that has been somewhat neglected by historians. It makes an important start to filling in that “green hole”.

**DIGGERS — THE AUSTRALIAN ARMY, NAVY AND AIR FORCE IN ELEVEN WARS**, by George Odgers. Endorsed by the Australian Defence Force, Lansdowne Publishing. RRP $49.95 (for 2 volumes).

Reviewed by Colonel John Buckley

This outstanding publication consists of 2 volumes: Volume 1 from 1860 to 5 June, 1944, and Volume 2 from 1944 to 1994.

The book describes the battles fought by the Navy, Army and Air Force from the Maori wars in 1860, until the Gulf War, then the Peace Keeping activities in the post war years up to Somalia in 1994.

In my opinion, George Odgers is the best of the recognised living war historians. He is always positive in his approach. I have known and appreciated his work for over 40 years. His narrative is on a plane far above the work of the current crop of war historians.

These books have been prepared in close co-operation with the Australian Defence Force. The foreword has been written by Admiral Alan Beaumont, who is taking a major role in encouraging the recording of Australian military history for posterity.

If anyone requires a book which gives them the history of the Australian Armed Forces in combat, from the time they first served overseas, then this is the book.

George Odgers served in World War II in New Guinea, Bougainville and Borneo. Later he served in Korea, Malaya and Vietnam. He has written extensively on military history and wrote a volume of the Australian Official War History. For a time he was head of historical studies at the Department of Defence and has written many good historical books.
BOOK REVIEWS

I strongly recommend this book be read by all potential war historians and their tutors at the Australian National University and the Australian Defence Force Academy. The narrative stands out as an example of outstanding research, accuracy and presentation which is not always apparent in the work of some current authors. There is hardly a page which does not include some photograph or reprint of some historic person or battle. Lansdowne has produced a quality product.

Some readers may ask, "can't the reviewer find some negative aspect of the book?". The answer is "no". I have tried to find something to question, but I have failed. It's a classic book - buy a copy and you will agree with my conclusion. It is presented in a most colourful slip case.

Congratulations to George Odgers, Lansdowne Publishers, the Department of Defence and all who helped with this publication. At $49.95 for the 2 volumes, it is very good value.


Reviewed by Tim Gellel.

There is a scene in the "Blackadder Goes Forth" series, where CAPT Blackadder, when told of a "brilliant" new tactical plan for a forthcoming offensive, asks General Melchet "would this plan involve us climbing out of our trenches and walking very slowly towards the enemy?" When asked how he knew of the plan's substance, Blackadder replies that "it's the same plan that we used the last time, and the seventeen times before that". This common misconception of how the British (and the forces of the Empire) fought WWI is redressed in Paddy Griffith's most recent work.

Few authors would consider the subject as one with sufficient meat. Instead there has been a tendency to emphasise the success of "storm troop tactics", particularly those developed by the Germans. The aim of these attacks was the same as their larger counterparts, to first breakthrough the enemy line and then breakout, but despite constant efforts by both sides a true breakout was not to be achieved until the next war. It was recognition of this fact that led to the more pragmatic "bite and hold" attacks, that resulted in the battles of attrition of 1915-16.

Griffith asserts that there was great development of tactics in WWI, and that it is not only the Germans to whom credit should be given for tactical innovation. While not apologising for "Chateau generalship" he successfully argues that it is partially this distance from the front line that forced new tactics to evolve at the lower level. At the beginning of the war, tactical knowledge and responsibilities were the domain of the senior officers (LTCol and above). This was particularly the case in infantry units, which were restrained by organisational limitations. Infantry soldiers were organised into four identical rifle companies and were armed initially only with rifles. Exotic weapons such as machine guns and hand grenades (referred to as bombs) were allocated into specialist platoons, established under the CO's command.

The most important of these specialist weapons was the machine gun. In 1914 infantry battalions were issued with 2 Maxim machine guns. In 1916 the cumbersome, water-cooled Maxims were removed from the Battalions' control and formed into separate units, Machine Gun Companies, on the basis of one company per infantry brigade. To replace the Maxims the battalions received the new, lighter air cooled Lewis automatic rifles, known as Lewis guns. The initial allocation of these weapons was four per battalion, but as the war progressed this was later increased to 8 (in early 1916), 16 (Jan-Feb 1917) and later 20.

It was during the Jan-Feb 1917 reorganisation that by the specialists — the bombers, scouts and Lewis gunners — went from being retained as a separate body at battalion or company headquarters, to being distributed evenly throughout the platoons. This fundamental change was a result of a military-industrial complex that had finally grown to meet demand. It was this "industrialisation" of warfare that necessitated a greater devolution of tactical responsibilities. In the first years of the war minor tactical decisions, such as the siting of a machine gun, were made by the Battalion Commander, usually a regular or militia officer with 15-20 years experience. Later in the war as the availability of bombs' and machine guns increased, these minor tactical decisions were thrust upon the shoulders of company commanders (CAPT), and later platoon commanders. This meant that as the war progressed, responsibility for minor tactical decisions devolved progressively from LTCol to CAPT to LT/SNCO (who had probably enlisted in 1914-15).

By 1917, the platoon had assumed the role of an independent tactical unit. The platoon was reorganised from four twelve man rifle sections into four specialised sections that made the platoon more self sufficient and capable of independently defeating strongpoints; a bombing section, a Lewis gun section,
a "rifle section and a rifle-grenade section. The new capabilities offered by these weapons brought with them new tactical responsibilities for the platoon commander. Indeed, the platoon commander's role on the battlefield had expanded from what had largely been one of keeping his men in formation. He now had the ability, and the responsibility, to employ the different weapons at his disposal and fight small scale tactical battles of his own.

The increased availability of weapons (both new and old), provided by the industrialisation of the war forced changes at the top as well. At the divisional level the changes were phenomenal: mortars of various calibres had increased from none to 24 per division and medium (Maxim/Vickers) machine guns from 24 to 64 as well as 300+ Lewis guns. Although the number of artillery pieces under direct divisional command decreased, this was more than compensated for by the allocation of resources from numerous newly formed corps and army artillery assets, coupled with an increase in the number of heavy calibre guns and a five-fold increase in shell production. Other advances were made in the new fields of war such as armour, gas warfare and use of aircraft. By war's end, senior officers were pre-occupied with coordinating support from these other arms in the face of an increasingly complex tactical environment.

Merely introducing new weapons however, did not address the reversals of 1914-1918. Success depended upon coordination of the supporting arms. In Monash's words "a perfected modern battle plan is like nothing so much as a score for an orchestral composition, where the various arms and units are the instruments and the tasks they perform are their respective musical phrases. Every individual unit must make its entry precisely at the proper moment, and play its part in the general harmony." Griffith pursues this metaphor to illustrate the increasing complexity apparent in the successive years of conflict: by 1916 the British had assembled the instruments, by 1917 had organised them into their respective sections and in 1918 was making music (with the notable exception of the Kaiser's Offensive of 21 Mar 1918).

Griffith is also careful to draw undue attention away from "war winners" such as the aircraft and the tank. Rather, he successfully demonstrates that the breakthroughs in the employment of artillery were of greater import. Often described as the "Gunners' War", WW1 was the first war where artillery was physically separated from the infantry battle. This separation was only possible through recent increases in weapon ranges and the use of indirect fire, an art which was developed by both sides, but further refined by the British as "predicted fire" in 1917. This technique meant that fire could be very precisely predicted using either a map or an aerial photograph to judge distance from the gun line to the target. For the 18 pounder gun (the mainstay of divisional artillery), firing out to a range of 4000 yards, accuracy to within 80 yards was normal. This ability allowed the British artillery to silently register targets, exercise greater control of barrages and switch targets quickly by shortening adjustment and ranging times.

While Griffith's occasional reference to the "claims and feats" of the colonial elements may not appeal to ardent Australian nationalists, it is nonetheless important to recognise that the principles laid down in his text are those that guided AIF operations on the Western Front and laid the foundations for the following war. By the time of "hundred days" in autumn 1918, when the Allied forces advanced to the Hindenburg Line, the British Expeditionary Forces, including the AIF, had in fact regained as much mobility to the battlefield as would be later acceptable during most of the Second World War. This text also serves to illustrate where, and under what conditions, many tactical principles that are still now taken for granted were created. Griffith also restores some lost faith in the generalship of an era when advances were invariably measured in hundreds of yards, but thousands of lives.

NOTES
1. When initially raised in 1914, infantry battalions were organised into eight rifle companies identified by the letters A to H. Each company was commanded by a Captain with two subalterns (Lieutenant or Second Lieutenant) as platoon (half company) commanders. On 1 January 1915 the AIF infantry battalions were reorganised (in Egypt) on the basis of British experience into four companies, each of four platoons.
2. In the case of the AIF at Gallipoli, these decisions were invariably made by the Brigade Commander.
3. For example, during the second battle of Bullecourt on 4 May 1917, the Australian 2nd and 4th Battalion used 30,000 bombs in a ten hour period (Nulli Secundus — a history of the Second Battalion AIF; compiled by F.W. Taylor and T.A. Cusack, New Century Press Pty Ltd, Sydney, 1942).
4. Towards the end of the war, Lewis Guns appeared to become increasingly popular, with platoons and companies carrying the Lewis at the expense of other weapons, and in spite of (or in compensation of) falling manning levels.
5. Griffith asserts that "General Maxse, a specialist on all aspects of battalion organisation, believed a Lewis section should have a minimum strength of nine men (Organisation of a Platoon), November 1917., in Maxse papers Box 69-53-10, File 42. Admittedly the same number of servants was sometimes operating two guns rather than one, and by the time of his Corps Commander's Conference off 17-20 Feb 1918, even Maxse had accepted that four men might do the job at a pinch. Questions and Answers, p.1, in the same box, File 44."
6. From March 1916 (952,708 Shrapnell and 818,932 HE, Smoke, Chemical) to October 1918 (2,890,030 Shrapnell and 6,367,528 HE, Smoke, Chemical).
7. Both the tank and the aircraft had to wait until 1940 to really come of age.
LIVE FROM THE BATTLEFIELD, by Peter Arnett, Bloomsbury, 1994, RRP $39.95, 463 pages, hardcover.

Reviewed by Major M.J. Pollock

Peter Arnett is a journalist who has worked in the print and television media for more than thirty years. Arnett has made his name and reputation for covering the world's war zones. Working for Associated Press (AP), the wire news service, in Vietnam, Arnett covered both sides of the war for 13 years until the fall of Saigon. During this time he was awarded the Pulitzer Prize for journalism. Arnett continued to report for AP later, in Cyprus and in Lebanon. In 1981, he joined the embryonic Cable News Network (CNN), which offered a 24 hour news service, as a reporter in Beirut, El Salvador, Moscow, Afghanistan and Panama. Arnett is perhaps most commonly known for his coverage of the 1991 Gulf War from Baghdad. The CNN television coverage of the night-time air assault against Baghdad made exceptional viewing and set a new standard for wartime journalism.

Live from the Battlefield is a fascinating example of the war correspondent's perspective of the military and the conduct of war. Arnett has reported from a variety of battlefields, observing a number of different armies and he has produced a book which is hallmark by its impartial discussion of the conduct of war. Arnett drew the ire of more than one general and more than one politician during his years of reporting and it is this reporting of fact not propaganda which stands out repeatedly in the book. The book includes much detail of conversations, people and events which must be taken with some scepticism after thirty years.

Live from the Battlefield briefly covers Arnett's early days in New Zealand and his travels in Asia before joining the wire service. The book tells little of the private Arnett, however, and is almost completely devoted to his war zone reporting. In spite of a narrow focus, the book makes interesting reading due to the breadth of Arnett's travels and his on-the-spot reporting. He was there when the communist tanks entered Saigon, he was in El Salvador while the death squads were active, he was in Afghanistan when the Mujahadeen fought the Russians and he was in Baghdad while the Coalition bombs fell. It is this eyewitness reporting style that made CNN and Arnett famous and is the best feature of the book. An interesting anecdote in the book is Arnett's encounter with a young Green Beret major, Norman Schwarzkopf, during an assault on a special forces protected village in Vietnam.

Live from the Battlefield is a well presented book which provides a journalist's perspective of the conduct of war, devoid of jingoism and cutting through to the real issues. The book provides a contrast to other biographies of war, normally produced by commanders who may lack the objectivity of an observer. Live from the Battlefield would make a good companion on the bookshelf to Schwarzkopf's It Doesn't Take a Hero.
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