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CHAIR'S COMMENTS

Welcome to Issue No. 197 of the *Australian Defence Force Journal*.

I am honoured to have taken over as Chair of the Australian Defence Force Journal Board from Major General Simone Wilkie who, while continuing as Commander of the Australian Defence College, has assumed broader responsibilities arising from the First Principles Review. On behalf of the Board and our readership, I thank Major General Wilkie for her leadership and guidance over the past two years.

For this issue, the Board had an impressive range of prospective articles, submitted by contributors from each of the Services and the Australian Public Service, as well as students of the Australian Command and Staff College and the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies. It was agreed that the student papers, in particular, continue to demonstrate the experience and insights of ADF practitioners in Australian defence and security issues, and broader geostrategic issues of the Indo-Pacific region.

The Board gave serious consideration to several articles for the 'best article' award. It decided to award the prize to Nigel Dobson-Keeffe and Major Warren Coaker for their important contribution on the issue of cognitive biases in the joint military appreciation process. In addition to being featured as the lead article in this issue, they will receive a certificate personally signed by the CDF and Secretary of Defence.

Lieutenant Colonel Ian Langford then provides an extremely well-written account of the role of US Army officer Albert C. Wedemeyer in developing the 'Victory Plan' of 1941, which was the blueprint for the general mobilisation of the US Army and the operational concept by which the US would prosecute the Second World War. Colonel Natasha Fox, currently a student on the Defence and Strategic Studies Course, follows with an interesting analysis of the impact of China's water security requirements, an issue not usually considered in assessments of the regional security environment.

Major Emma Broder, who attended the 2014 Australian Command and Staff College staff course, then usefully argues for a greater understanding and appreciation of the ADF's strategic culture, requiring—in her words—a more refined balancing between intellectual and 'muddy-boots' style officers. Captain David Proctor of the Royal New Zealand Navy, another student on the current Defence and Strategic Studies Course, provides an assessment of whether 'the rise of China' and its interest in the Southwest Pacific represents a threat to regional security, before coming to a very Australian, 'no worries' conclusion.

We then feature a thought-provoking article on the potential military application of 'biomimicry', and whether it will prove to be the next paradigm shift in warfare. This article was the prize-winning entry from the Chief of Singapore Armed Forces' most recent essay competition, which we are pleased to reprint with permission from *Pointer*, our counterpart journal in Singapore. It is followed by a topical article from Squadron Leader Peter Hartley arguing that Defence should adopt a joint airspace command and control structure to complement the recently-announced civil-military air traffic system.

Colonel Jason Blain, another current Defence and Strategic Studies Course student, then addresses the very contemporary issue of whether conflict is inevitable between China and the US over disputes in the South China Sea. Commander Paul Kirk, a 2014 Australian Command and Staff College student, reassesses the concept of 'Defence of Australia', arguing that the term should return to its broader strategic origins as representing a spectrum of defence policy options. Colonel Gavin Duncan, another Defence and Strategic Studies Course student, concludes the issue by examining Japan's shifting security framework, arguing it should result in Japan normalising the use of its national power within the global security framework.

The issue concludes with a selection of book reviews. As always, we remain keen to hear from readers wishing to join the list of reviewers, who are sent books provided to the Editor by publishers. If you are interested, please provide your contact details and area of interest to the Editor at publications@defence.adc.edu.au Please note also that the 'guidance to reviewers' section on the website has been updated, providing clearer guidelines on the purpose of such reviews and what we would expect them to contain.

The November/December edition will be a 'general' issue and contributions should be submitted to the Editor, at the email address above, by mid September. Submission guidelines are on the *Journal*'s website: see www.adfjournal.adc.edu.au

Before closing, I would like to mention that 2016 will mark the 40th anniversary of the *Journal*, and that the mid-year edition will be the *Journal*'s 200th issue. One of the ideas being contemplated is the production of a special, commemorative issue, perhaps incorporating the 'best' articles of the past 40 years, or perhaps a selection that represents the transformational development of the *Journal* over that period. It has been suggested that readers could be invited to nominate their favourite one or two articles from the complete listing available in e-format on the *Journal*'s website at <http://www.adfjournal.adc.edu.au/site/journal_index.asp> Further details will be announced in due course.

Finally, please note that we have included a new item, 'Reading Lists', at page 105. It contains links to the suggested reading lists as promulgated by the Service Chiefs. I recommend these reading lists to all ADF officers, and to others who wish to further their professional education and development.

I hope you enjoy this edition and would encourage your contribution to future issues.

Ian Errington, AM, CSC
Principal
Centre for Defence and Strategic Studies
Chair of the Australian Defence Force Journal Board

FORTHCOMING SEMINARS AND CONFERENCES

2 September 2015

Lowy Lecture – General David Petraeus, AO (retd)
Lowy Institute, Sydney
http://www.lowyinstitute.org/events/2015-lowy-lecture-general-ret-david-petraeus-ao

6-8 October 2015

Sea Power Conference
Theme 'The Future of Sea Power'
Sydney Exhibition Centre, Glebe
http://www.pacific2015.com.au

NOTE

To advertise forthcoming seminars and conferences in future issues of
the *Journal*, please email details to the Editor
publications@defence.adc.edu.au

Thinking More Rationally: cognitive biases and the Joint Military Appreciation Process

Nigel Dobson-Keeffe, Defence Science and Technology Organisation
Major Warren Coaker, Australian Army

> Their judgment was based more on wishful thinking than on sound calculation of probabilities; for the usual thing among men is that when they want something they will, without any reflection, leave that to hope, while they will employ the full force of reason in rejecting what they find unpalatable.
>
> Thucydides, *History of the Peloponnesian War* [1]

Introduction

A cornerstone of strategic and tactical success is good decision-making. All militaries strive to make effective decisions based on a rational analysis of the situation. And yet things go wrong. Hindsight reveals that many military operations throughout history have failed due to poor decisions. Although such mistakes have been attributed to a variety of explanations, the underlying cause of many of these situations is frequently a failure in human cognitive processes; or, more simply, poor thinking.

Despite the military's care in developing robust planning and decisions processes, humans are not good at clear thinking. Our minds are misled into believing they have reached rational, balanced conclusions but, in reality, cognitive bias distorts our conscious thinking processes, making us susceptible to mistakes and hence poor decisions.

Many of these are systemic errors. They are inherent in our everyday actions and repeated more often than we realise. However, repeatable errors imply that they are predictable—and being predictable, they are also avoidable, at least to some extent.

There is little evidence that the Joint Military Appreciation Process (JMAP), as used by the ADF, considers the effects of these cognitive biases, despite their potential to affect operational decisions.[2] With this in mind, the JMAP needs to be examined to determine its vulnerability to bias. This article examines a selection of cognitive biases with reference to their effect on the JMAP and suggests some 'de-biasing' techniques to help improve decision-making.

JMAP: an inherent weakness

In the Australian military, the JMAP codifies decision-making processes in a way designed to complement the needs of the military operational environment. It is used to apply operational art and design techniques in support of the planning of campaigns and operations, and some other operational activities. It facilitates the rapid planning and complex decision-making processes required primarily at the operational level.

The JMAP has been developed over time based on solid decision-making theory and its practical application in the military environment. It has proven to be an effective tool for operational planning and is often used to assist non-operational staff work as well, although it is not formalised for that context.

In its current form (see Figure 1), the JMAP is a four-step process: mission analysis; course of action development; course of action analysis; and decision and concept of operations development—supported by joint intelligence preparation and monitoring of the battlespace, which continuously provides the information to support planning.
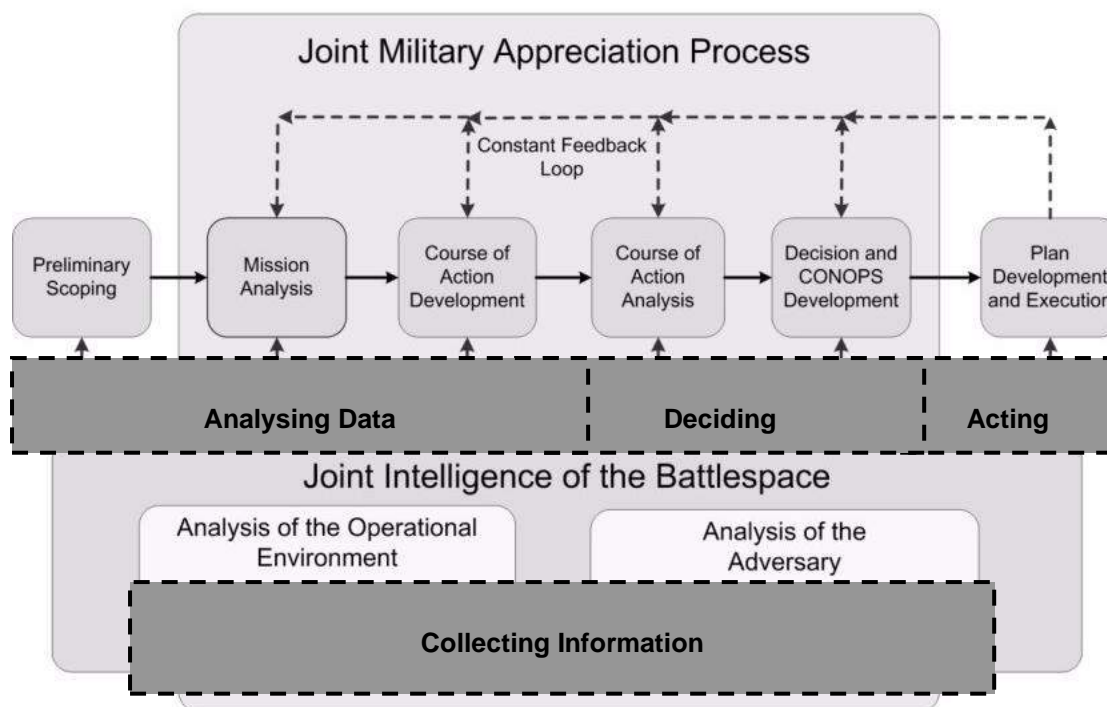
Figure 1. Mapping JMAP with a generic decision-making process

The core problem with the JMAP is that it fails to consider the cognitive and emotive effects of the planning staff and the commander that influence decision making.[3] While most military officers would like to think they can take an objective viewpoint and make a rational decision, research suggests that is not a correct assumption. Numerous studies and empirical observations confirm that humans regularly make subjective, or biased, judgments even when they think they are being objective.[4]

However, the foundation on which the JMAP has been designed is the assumption that decision-makers and staff planners act rationally. But because humans often do not act rationally—and are biased without realising it—plans and decisions are susceptible to cognitive bias and are influenced by emotional and social factors that are not currently considered in the JMAP.

Cognitive biases and rationality

Cognitive biases are departures from purely rational thought.[5] They are systematic errors in thinking that prevent us from being entirely rational.[6] There are a number of causes. One common cause is complexity. The human mind is not equipped to deal with the sheer number of factors and their relationships in many situations found in a modern, technologically-complex society. In order to counter this, we commonly use heuristics (rules of thumb) to help assess complex situations.

While heuristics are helpful and were useful in a simpler world, they are also a source of cognitive bias because these 'rules of thumb' are often inadequate. Personal and situational factors play a part too. Heuristics can be corrupted by a person's experience. For example, 'dumb luck' that pays off once encourages a person to try the same approach—'it worked before, so it should do again'. This is not necessarily rational. Innate human traits play a role too. Human tendencies, such as being overconfident, influence our abilities to objectively assess situations. The result is that we fail to think in a rational manner, despite our best intentions. These sorts of effects, whereby our deliberate thinking is unwittingly influenced, are called cognitive biases.

Cognitive biases are not always bad. In complex environments, such as during military operations, being blind to a number of factors can reduce 'cognitive dissonance'. Cognitive dissonance is a term used to describe a person's inability to deal cognitively with the complexity of a situation. Competing factors and

considerations slow the mind's ability to respond effectively. It is similar conceptually to cognitive overload, which has had some popularity in the capability development of command and control systems. However, not understanding that biases exist, and that our thinking is subtly influenced by their effects, inhibits the effectiveness of the appreciation process and subsequent execution of the resultant plans.

Hundreds of cognitive biases have been identified and these are categorised in a number of ways. Many of these biases are only subtly different to each other; others may represent the opposite ends of the same spectrum in terms of their effects. A short list of common biases is shown at Table 1.

Table 1: A short list of common biases

Outcome bias	Hindsight bias
Planning fallacy	Irrational escalation
Bias blind spot	Contrast effect
Mere exposure effect	Over-confidence
Bandwagon effect	Pattern recognition
Illusion of control	Gamblers fallacy
Selective perception	Illusory correlation
Authority bias	Ostrich effect
Stereotyping	Ambiguity effect

Not everybody is equally susceptible to every bias. However, it is generally recognised that everybody is in some way influenced by bias. And, indeed, an individual's failure to appreciate his or her own biases is recognised as a bias in its own right, known as 'bias blind spot'.

The key is to recognise that cognitive biases exist. They influence our decision-making every day, and often prevent those decisions from being purely rational. That being the case, it makes sense that bias is considered as a factor in military appreciation and decision-making processes.

Influence on the JMAP

Cognitive biases are systemic. And although they interact with the JMAP and general planning processes in different and often subtle ways, they are always present. Some are more likely to have a significant effect than others, and some will have a cumulative effect. It is important to understand when bias is likely to affect planning in order to counter its influence.

Consider the following example. In the lead up to the 2003 Iraq war, the US had become increasingly concerned that Iraq might be reconstituting its weapons of mass destruction capability, in particular the ability to refine nuclear fuel for weapons. For this to occur, many aspects of advanced engineering would be required, with quite specialised equipment and industrial controls. One of the key components would be centrifuges, requiring very precise tubes of specialised aluminium alloys—which it was thought Iraq had attempted to procure, and which formed the basis of the US intelligence community's case against Iraq.[7]

However, what was inadequately considered was whether Iraq had attempted to procure other relevant equipment and facilities, such as specialised high-speed drives, specialised bearings and related industrial

control equipment. Furthermore, expert scientific opinion was ignored as to whether the alloy tubes might have a legitimate military use, such as the manufacture of rockets. The intelligence community allowed certain information to confirm its pre-existing ideas, while ignoring a larger body of evidence suggesting that no attempts had been made by Iraq to develop a centrifuge plant. As the war progressed, it became apparent that Iraq had no such plant, and was not capable of developing such a plant. However, it was not until 2005 that the scope of the error was made public.

While it is easy in hindsight to find fault with the intelligence community's assessment, underlying cognitive biases are likely to have been significant contributors to the mistakes made. For example:

- **Confirmation bias** - very little attempt was made by the intelligence community to disprove its hypothesis that Iraq was developing the capability to refine nuclear fuel; instead, its effort largely concentrated on proving the existence of the capability.

- **Availability bias** – more credence was given to information that was available, ignoring the gaps of knowledge.

- **Information bias** – the intelligence community seemed to have relied on the quantity of information over its quality, as well as lacking the ability to critically analyse the relative significance of the information available.[8]

- **Groupthink** – despite a few voices of dissent, the 'group' took over. The natural urge to conform with the thinking of the group is likely to have influenced at least some individuals, leading to a snowball effect as analysis was passed up the chain of command and shared with other intelligence agencies.

- A number of **other biases** were evident, including the framing effect, over-confidence, false pattern recognition, interloper effect, and mere exposure effect.

While any one of these biases, in isolation, may not have had a large influence on the intelligence community's analytical processes, the cumulative effect of a number of biases is almost certain to have contributed to its eventual flawed conclusion.

In general, the significant (but subtle) influence of these biases indicates a need to understand their effects. By reducing their negative influence on decisions, a more rational outcome can be reached. Each stage of the general decision-making process is thus discussed below.

Collecting information

Collecting information in a military environment is an ongoing and iterative process that occurs throughout the conduct of the JMAP and indeed the conduct of operations. It is most closely aligned with joint intelligence preparation and monitoring of the battlespace. Collectors, analysts and commanders should be aware that even in the simple act of gathering information, cognitive bias can creep in.

Many of the biases likely to occur during information collection concern subconscious behaviours that cause individuals (and groups) to ignore relevant information and/or give too much emphasis to other information. These biases have the potential to exert a significant effect. They can lead to incorrect conclusions and to 'seeing' patterns when none exists. Biases that are important to information collection in a military environment are described briefly below.

- **Information bias.** Information bias refers to the tendency for humans to acquire more and more information. Some of the reasons given for collecting more information include the perception that more information may lead to better decisions; a fear that mistakes will be blamed on the lack of information; collecting information just in case it is useful; and the thought that the act of performing any activity is better than inaction.

  However, in many cases, collecting extra information has the potential to lead to cognitive overload unless there is an adequate supply of time or expertise to filter the information. Overloaded decision makers may omit critical information, fail to assess it in depth, delay processing it, make

invalid approximations, or simply give up and make a decision early without full consideration.[9] In a military situation, however, the structure and delegation systems in place typically mitigate some of the effects of information overload.

- **Availability bias.** Availability bias occurs where the judgment relating to the likelihood of an event is moved away from what a normative process would indicate because of what is easily available in memory. Thus decisions can be biased toward vivid, unusual or emotionally-charged examples in the case of episodic memory or towards semantic memories which have been strengthened through repeated exposure. The problem occurs when information is associated with these easily-available schemas without reliable evidence to support linkages. Individuals unwittingly make associations with emotive or recent memories that could affect decisions.

- **Pattern recognition.** A common fault shared by most people is false pattern recognition. It is a condition of the human mind to make sense out of the world. Hence we tend to try and make patterns that do not necessarily exist. Experts are not immune; in fact, their expertise can provide additional pressure to 'see' a pattern in random events. Conscious effort must be expended to avoid seeing patterns that do not exist.

Analysing data

Once collected, the data needs analysis. In defence planning, this is commenced through mission analysis and continued through course of action analysis. These primary stages of the JMAP are where analysing data is important—and where it is susceptible to some types of cognitive bias. Cognitive errors in analysis tend to arise from false associations and faulty probabilistic thinking. Although 'genuine' errors in analysis occur through natural mistakes, some of these errors are systemic and predictable.

There are many biases that will cause us to actively neglect, modify and/or distort collected information without realising it. Analysing data in isolation can itself lead to many biases, such as the clustering illusion, a neglect of prior base rates and the 'recency' effect. Confirmation bias, pattern recognition, illusory correlation and irrational expectation of outliers are common tendencies that lead to misleading information evaluation. Some biases which have clear impact on the JMAP are outlined below.

- **Confirmation bias.** Confirmation bias is the tendency to seek or evaluate information that is partial to existing beliefs and expectations. People by their nature will try to confirm their own beliefs, reinforcing the coherence of their worldview, rather than trying to disprove what they believe in.[10]

  From the initial stages of planning, staff will have a set of beliefs developed from their background, training and experience. These beliefs will be further supported through the individual's situational awareness. Each planner will then be attempting to put new information into their existing mental model of the situation. As the situation continues and the amount of information made available increases, the mind of planner will begin to selectively pay more attention to information that matches prior beliefs than information that does not. Non-conforming information is easily ignored and difficult to remember unless additional cognitive effort and time is devoted to that function.

- **My-side bias.** My-side bias is the tendency for people to assume that others share the same or similar thoughts, beliefs, values or positions.[11] Research has consistently shown that people will tend to side with their own, despite trying to be balanced and purely rational. The ability to understand the enemy, and 'to walk in their shoes', is a significant component of the thinking skills required to reduce my-side bias in analysing data available in the JMAP process. In Iraq, a poor understanding of the relationship between political parties and religious groupings arguably led to the projection of American ideals onto an inappropriate foreign situation—an example of my-side bias.

- **Illusory correlation.** When analysing data, it is possible to draw erroneous conclusions from the situation and previous experiences. Similar to the problem of pattern recognition, it is surprisingly easy to draw conclusions based on relationships between factors that do not exist.

- **Over-confidence.** Over-confidence is a bias in that it is a predictable cognitive characteristic that often influences decisions.[12] While confidence is a desirable trait in the military, particularly in commanders, it should be countered with critical evaluation of one's own thinking. Even externally to the military, people can be demonstrably over-confident and not aware of the extent that influences their decisions. A common example is the tendency to under-budget and over-estimate schedule in projects, leading to many of the criticisms of Defence acquisition.

Deciding

The decision on a course of action is the crux of operational planning and defines its outcomes. Although decisions occur throughout the earlier stages of the JMAP, deciding on a course of action to develop into a plan is central. And like the other stages of the decision process, the simple act of deciding can be unwittingly influenced by bias.

Decision-making by definition is the process of selecting the best from a number of alternatives. But deciding on a course of action can be biased, even if information collection and analysis has avoided most other thinking traps. Two biases that can influence decisions are described in brief below.

- **Groupthink.** Groupthink is the tendency for individuals to allow their thinking to be heavily influenced by members of a group to which they belong. Military culture is built around the concept of cohesiveness and *esprit de corps*. One desire in this culture is to build on social identification within the military group, leading to greater in-group social influence and greater attention to messages from within the group which in turn leads to greater trust.

  This identification may lead to a repression of differing opinions and limit the desire to challenge information presented from within the group. This culture can be expected to exist throughout the JMAP process, however, it may bring a critical weakness when it comes to decision-making. The very value of cohesiveness due to social identification may take precedence over genuine critical thinking, frankness and dissent. Thus attempting to think as a group can be influenced by the natural social interactions and lead to symptoms such as:

  o   concurrence seeking (rather than critical evaluation),

  o   illusion of consensus,

  o   suppression of dissent,

  o   an illusion of invulnerability,

  o   negative or biased stereotypes, and

  o   self-censorship (restricting information flow and availability).[13]

  These symptoms can lead to a restriction of options, anchoring to initial group options, reduced contingency planning, poor risk analysis and a lack of discussion in depth concerning the benefits and costs of various actions.

- **Framing bias.** Framing bias derives from how a question or problem is phrased, such as 'is that glass half empty or half full'? Very different responses can result from the wording of a question or information requirement. The overall way a problem is framed can be adjusted to reinforce a particular path of operation. Information requirements can be worded to get very different outcomes.

  This non-military example is illustrative. Identifying organ donors is commonly done by one of two ways: either by asking people to 'tick a box' if they are willing to become a donor; or by asking people to 'tick a box' if they want to opt out of the donor scheme. These similar questions (opt in, or opt out) have exactly the same outcome—the respondent either becomes a donor or not. Yet those countries that use an opt-out question, rather than an opt-in one, have a much higher donor participation rate.[14]

Acting

Finally the execution of the plan itself can become susceptible to cognitive bias. Historically, many of the great military disasters have had a strong component of persisting with a doomed expedition. In recent times, biases have been attributed to failure in conflicts involving the Bay of Pigs invasion, the Vietnam War and the 2003 Iraq war.[15] The cognitive bias with the largest potential to affect outcomes once an operation has commenced is the 'sunk cost' effect. Other biases affecting execution are also briefly addressed below.

- **Sunk cost effect.** The sunk cost effect is manifested in a greater tendency to continue an endeavour once an investment in money, effort, time or other resources has been made.[16] Even if a new course of action would result in better outcomes, there is a psychological desire to continue with the existing course of action so that the effort expended so far has not been a 'waste'.

  A typical example occurs within acquisition projects. Suppose a project spends several million on a capability option. If a cheap alternative is consequently offered that would save money overall, the sunk cost effect predicts that the current, more expensive option will still continue in order to prevent those millions already spent from being perceived as wasted. But this is not rational if an overall saving could be achieved. The Seasprite helicopter is a well-known example, where considerable savings could have been achieved had the cancellation decision been made earlier.[17]

  It should be noted that this bias conflicts directly with the primary principle of war in Australian and British doctrine (as well as Chinese), namely 'selection and maintenance of the aim'. However, even though this is a master principle, doctrine also states that if political considerations change, the new objective will create a change in the plan. Flexibility is still a key to campaign planning.[18]

- **Illusion of control.** One aspect of acting is that there is often an illusion of control. Even within the military environment, where there is an acceptance of uncertainty, there remains a strong tendency to believe the environment can be controlled. This leads to under-estimation of risks and the failure to properly allow for 'black swans events', which are events that comes as surprise and have a major effect.

The above factors can impact an individual or an entire group. Indeed, a group can escalate individual thinking errors.[19] The stronger a group and its desire for inclusion and conformity, the stronger the forces of impression management will be. Within military groups, strong *esprit de corps* is likely to increase the likelihood of this effect.

In the early 1960s, former US Under-Secretary of State, George Ball, asserted in relation to the early Vietnam War that:

> Once we suffer large casualties, we will have started a well-nigh irreversible process. Our involvement will be so great that we cannot - without national humiliation - stop short of achieving our complete objectives.[20]

This is arguably a rare instance where the possibility of sunk cost and irrational escalation was identified in advance. Once committed to a course of action, people tend to stick to that course and neglect other considerations that would support a change of strategy. As such, cognitive bias does not just effect planning but can influence action, including assessments and evaluations.

Mitigating bias: a conceptual approach for 'de-biasing' the JMAP

If cognitive biases have the potential to influence so much of our rational decision-making, how do we 'de-bias' the JMAP? The answer is not simple. In fact, it is probably impossible to completely counter the effect of bias in practical decision-making.[21] Awareness is not enough, not least because studies have shown that despite being made aware of a bias, people typically revert to biased actions.[22] It is simply not practical to maintain a detailed awareness of all potential biases and their effects. But at least an awareness of the existence of cognitive bias gives people the understanding to reflect more deeply on issues, to investigate the possible causes of error prior to a decision, and to be critical of their thought processes.

In this article, four general strategies are suggested. These are unsurprising and already used to some extent in most workplaces, although usually not to the extent required to mitigate bias. Each possesses a variety of underlying techniques that can be used. These strategies are:

- understanding and recognising bias,

- promoting (and rewarding) lateral and creative thinking,

- ensuring critical thinking, and

- enhancing diversity.

Understanding and recognising bias

Notwithstanding the prior warning that awareness is not enough, the simplest strategy to combat cognitive bias is to develop an understanding that biases exist and recognise those types common to the relevant working environment.

People are likely to soon forget or overlook bias effects. Accordingly, in order to overcome this, those using the JMAP need to be explicitly reminded to consider cognitive biases and their potential effects. This may take the form of checklists at appropriate stages, to highlight possible thinking traps, and/or the implementation of regular training on thinking skills.

In the collection phase, staff should be asking themselves questions to reduce biases that restrain thinking (to avoid availability bias etc) and ensure that balanced, relevant information is collected. Like in the other phases below, this is not exactly surprising. What is surprising is that despite the obviousness of what should be done, people continue to restrict their thinking (to a much greater extent than is generally recognised). To counter this, staff should be encouraged to explicitly ask themselves things like:

- In what way has collection been influenced by recent events?

- How potentially useful is the information? Is it based on historical records or structured requirements?

- What patterns are there? What is the evidence for their existence?

- How balanced is the collection? What perspectives have not been captured?

During analysis, it is important to try and reduce biases that are likely to lead to incorrect conclusions. This requires both lateral and critical thinking. Critical thinking includes examining one's own thoughts and processes as well as the information at hand. Checklists aimed at reducing these might include:

- What information would officers in other services look for, officers both above and below your own level and what information is relevant to support and logistics?

- What information conflicts with prevailing opinions? Has it been adequately considered, or just brushed aside? What is the validity and veracity of supporting and conflicting information?

- What would this information look like and how would one compare the information to get closer to the real world situation?

- What are the alternative explanations for what is being observed?

- What method would you use for determining the accuracy and relevance for each piece of information?

- Is the information relevant for other plans in contrast to the currently accepted commitment?

The most important time to review cognitive biases is the point at which the decision is made. The information has been collected and analysed, potentially with biases, and yet the information has not been acted on. The commander should critically evaluate the work of his staff to identify possible biases in planning before choosing a course of action. Some questions for reflection are:

- **Over-optimism** – is the team overly supportive of a particular course of action? Have they adequately criticised it and/or considered other options?

- **Groupthink** – were there dissenting opinions? Were they explored?

- **Risk** - are the courses of action risk seeking or risk averse? Does the risk analysis consider uncertainty?

- Does the suggested course of action rely too heavily on past successful actions, de-emphasising the risks?

- Has sufficient, relevant and appropriate information been obtained to support the recommendations? Can the data be substantiated?

- **Sunk cost effect** – is the course of action anchored to past actions because it is always done that way? Are there viable alternatives? [23]

Lateral and creative thinking

Rigidity of thinking is a factor that leads to people being susceptible to cognitive bias. By following a too narrow thinking focus, an individual can fail to consider alternative options, other viewpoints or appreciate the bigger picture. People do not recognise their own rigidity of thinking and even less often challenge themselves to change

Military training exacerbates this problem as it encourages members to think in a similar manner. While this has some benefits at junior ranks, more senior members need to broaden their thinking skills. Consequentially lateral and creative thinking is a general method to reduce many biases, such as framing and my-side bias.

When collecting information, and particularly conducting analysis, lateral and creative thinking should be encouraged to reduce bias at the point of source. Although the tools and the techniques within the JMAP have been developed over time and work well, staff should not be constrained by these tools alone.

Numerous lateral thinking techniques are available. Techniques such as de Bono's 'Six Thinking Hats', his CoRT program, force field analysis and even brainstorming can be used.[24] Unlike traditional approaches to critical thinking, which are based on a reductionist approach and argumentation, lateral thinking seeks to provide tools which are broader in application and use creativity as a method to see problems from a variety of viewpoints.

Critical thinking

Similarly, critical thinking is required to reduce cognitive bias in the decision-making process. Where lateral thinking aims to reduce biases more closely related to gathering information and generating options, critical thinking is required to reduce other biases such as over-confidence, confirmation bias and sunk cost effect.

Critical thinking can be defined as higher order thinking that is purposeful, reasoned and goal directed.[25] Aspects of this behaviour include testing assumptions, seeking consistency and critically evaluating available evidence, which are behaviours that can be seen in experienced decision-makers.

There are many thinking fallacies and psychological tricks of the mind. Our memory, thinking processes and even our sight can be tricked. Hence, we should be sceptical of everything we think and do, and critically review our actions and plans to ensure they are valid. Even when we think we are being critical, evidence suggests we are not—that we are too easy on ourselves.

Tools which use structured analytical techniques can be used to simplify and structure a problem into cognitively manageable pieces. By reducing the complexity of a problem, each piece can be analysed with less effect from biases and easier critical thinking processes.[26]

Red-teaming, or the use of a 'devil's advocate', can provide an effective method of critical analysis. Although red-teams are already used in some contexts within military planning, extending their use is

likely to be beneficial. Incorporating individuals or teams whose specific role is to pick faults with a plan will likely result in a much more rigorous analysis. Such a team is much less likely to be invested in a proposed plan and hence will find it easier to criticise objectively.

Diversity

Diversity is this context does not refer to the inclusion of minority or disadvantaged groups. It refers to achieving diversity of thought, and in the decision-making style and experience within teams generally and planning teams in particular. If a team consists solely of people who think in a particular manner, then issues do not get explored as thoroughly, and alternative ideas might not be expressed.[26] It should be no surprise that a planning team, for example, should not contain only warfighters—logisticians are also required for an effective plan, and potentially even scientists to prepare for analysis and evaluation.

Similarly, an ideal team will have members with different viewpoints and different thinking styles (analytical, intuitive, naturalistic, spontaneous, heuristic etc) in order to provide a thorough and balanced assessment. Although this may not always be possible, particularly in a military environment when similar attitudes are encouraged, it does provide an effective means of reducing bias.

Conclusion

This article has taken a broad brush approach to describing the relationship between cognitive bias and the JMAP. It does not imply that the JMAP is a bad process. Rather, it points out that the JMAP could be improved by considering cognitive bias. Decision-making is influenced by psychological processes—perfect rationality is not possible. Given that, it would be beneficial to acknowledge that cognitive bias exists within Defence planning doctrine, and that decision-makers need to take appropriate steps to minimise its influence.

Having briefly covered a few of the varied biases in this paper, it should be evident that cognitive bias can influence Defence decisions. Biases are systemic and have a subtle effect that can be significant; and yet they are often overlooked. These biases have a variety of causes and there is no simple solution due to their innate nature. However, methods of minimising their effects do exist.

By understanding their nature, by thinking laterally and then critically examining both the information available and the analysis, a more robust decision-making process could be enabled. To do this, individuals need to be both open-minded and critical. Decision-makers should test their own assumptions (in addition to those of their staff), critically evaluate the options available, and be prepared to change their minds rather than be constrained to a single line of thinking. Most people think that they do this already but the reality is that they do not.

The awareness of cognitive biases is a key first step in countering their impact on JMAP and military decision-making processes. Awareness needs to be followed with checks and balances to ensure that the effects of biases are limited and not allowed to impede the decision-making process undetected. Reducing the negative effects of cognitive bias is an opportunity to improve decision-making in Defence and avoiding some of the mistakes of the past.

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Notes

1   Thucydides, *The History of the Peloponnesian War,* translated by R. Warner, Penguin: London, 2009.

2   ADF Warfare Centre, *ADFP 5.0.1 Joint Military Appreciation Process*, Defence Publishing Service: Canberra, 2009.

3   Recent decision-making theory highlights the effects of emotions and social influence on decision-making. Like cognitive biases, and often related to them, these effects have subtle but persistent and observable effects on decisions. However, they are not within the scope of this paper.

4   See, for example, Thomas Kida, *Don't Believe Everything You Think: the 6 basic mistakes we make in thinking*, Prometheus Books: New York, 2006; Joseph Hallinan, *Why We Make Mistakes*, Broadway Books: New York, 2009; Cordelia Fine, *A Mind of Its Own: how your brain distorts and deceives*, Norton: New York, 2006; and Dan Ariely, *Predictably Irrational: the hidden forces that shape our decisions*, Harper Collins: New York, 2008.

5   We tend to think of rationality as the ideal of thinking and decision-making. However, rationality is not a panacea. It is normally associated with deliberate (rather than intuitive) thinking. And there is some debate as to whether intuitive or deliberate thinking is better. For example, Malcolm Gladwell argues in *Blink: the power of thinking without thinking* (Back Bay Books: New York, 2007) the case for intuitive thinking being more effective; while Daniel Kahneman in *Thinking Fast, Thinking Slow*, Kahneman (Farrar, Straus and Giroux: New York, 2011) points out its many pitfalls, preferring deliberate thinking styles. However, there is growing consensus that both have advantages. In simple terms, intuitive decision-making is more beneficial in time-critical situations (for example, tactical situations on the ground); whereas deliberate thought is generally more appropriate when the resources are available. This article is focused on deliberate decision-making, and so is more aligned with operational and strategic decisions rather than boots-on-the-ground tactical decisions.

6   It should be noted that cognitive biases are not instinctual biases, such as those leading to racial or sexual discrimination. Cognitive biases are about thinking and errors in our deliberate thought processes, commonly referred to as System 2 thinking.

7   L.H. Silberman and C.S. Robb, *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction*, US Government: Washington DC, 2005.

8   The importance of intelligence-led operations is recognised. There is no intent to suggest that less information should be collected – it is important to know as much about the threat and the environment as possible. However, cognitive overload is an issue that should be acknowledged. Given limited resources, appropriate priorities need to be established. During analysis, there is a limit to what individuals can assimilate effectively in the limited time they may have available.

9   J.G. Miller, 'Information input overload and psychopathology', *American Journal of Psychiatry*, Vol. 116, No. 8, 1960, pp. 695-704.

10   R.S. Nickerson, 'Confirmation Bias: a ubiquitous phenomenon in many guises', *Review of General Psychology,* Vol. 2, No. 2, p. 175.

11   K.E. Stanovich and R.F. West, 'Natural myside bias is independent of cognitive ability', *Thinking & Reasoning*, Vol. 13, No. 3, pp. 225-47.

12   Over-confidence in this context refers to over-confidence of knowledge, not directly to an individual's general confidence. For example, a timid person can still be over-confident of the knowledge that they possess.

13   I.L. Janis, *Victims of Groupthink: a psychological study of foreign-policy decisions and fiascoes*, Houghton Mifflin: Oxford, 1972.

14   L. Shepherd, R. O'Carroll and E. Ferguson, 'An international comparison of deceased and living organ donation/transplant rates in opt-in and opt-out systems: a panel study', *BMC Medicine*, Vol. 12, 2014.

15   B. Schwartz, 'The Sunk-Cost Fallacy: Bush falls victim to a bad new argument for the Iraq war', Slate website, 9 September 2005, available at <http://www.slate.com/articles/news_and_politics/hey_wait_a_minute/2005/09/the_sunkcost_fallacy.html 2005> accessed 10 June 2015.

16   H.R. Arkes and C. Blumer, 'The psychology of sunk cost', *Organizational Behavior and Human Decision Processes*, Vol. 35, No. 1, 1985, pp. 124-40.

17   This is a rather simplistic explanation. There are often many complexities to the situation, such as political and contractual imperatives. It is also much easier to identify exit points with hindsight. Hindsight itself is considered a bias as people tend to prefer simplistic answers after the fact, which they could not have identified at the time. Most people sympathise with this to an extent but tend to remain overly critical of past decisions.

18   ADF Warfare Centre, *ADDP-D Foundations of Australian Military Doctrine*, Defence Publishing Service: Canberra, 2009; and UK Department of Defence, *JWP 0-01 British Defence Doctrine (Fifth edition),* Department of Defence: London, 2011.

19   G. Whyte, 'Escalating Commitment in Individual and Group Decision Making: a prospect theory approach', *Organizational Behavior and Human Decision Processes*, Vol. 54, No. 3, 1993, pp. 430-55.

20   G. Ball, *The Pentagon Papers*, Beacon Press: Boston, 1971.

21   Nor is it likely to be desirable. Biases can actually be beneficial in reducing complexity, cognitive dissonance and reducing decision time.

22   While there is some anecdotal evidence from industry that high-performing individuals can develop personal processes to overcome cognitive bias, it is rare—and possibly only in reaction to an external stimulus. Deliberate strategies and built-in processes are required to have a positive and lasting effect.

23   Most of these questions are adapted from D. Kahneman, D. Lovallo and O. Sibony, 'Before you make that big decision' in D. Kahneman (ed.), *HBR's [Harvard Business Review] 10 Must Reads on Making Smart Decisions*, Harvard Business Review Press: Cambridge, 2013.

24   See, for example, Edward de Bono, *Six Thinking Hats*, Back Bay Books: New York, 1999. For the CoRT program, see E. de Bono, 'CoRT Thinking Skills Curriculum', Edward de Bono website, available at <http://www.edwdebono.com/cort/index.html> accessed 10 June 2015. For brainstorming, force field analysis and other techniques, see Bob Dick, *Helping Groups to be Effective: skills, processes and concepts for group facilitation*, Interchange Publications: Chapel Hill, 1991.

25   A.S. Helsdingen, T. Van Gog and J.G. van Merriënboer, 'The effects of practice schedule on learning a complex judgment task', *Learning and Instruction*, Vol. 21, No. 1, 2011, pp. 126-36.

26   Note there are a couple of caveats to diversity. Firstly, diversity is only beneficial if different viewpoints are heard and considered—a diverse team that ignores the minority view is not likely to gain any advantage. Secondly, diversity can lead to conflict. Opposing ideas require resolution in order to achieve a considered decision. The resulting conflict, if not handled well, can lead to a reduction in performance. Thus the benefits of diversity are dependent on the professionalism and dynamics of the particular team.

A man with a plan — a study of Albert Wedemeyer and the Victory Plan of 1941

Lieutenant Colonel Ian Langford, DSC and Bar, Australian Army

> An officer who has not studied war as an applied science, and who is ignorant of modern military history, is of little use beyond the rank of Captain.
>
> Field Marshal Garnet Joseph Wolseley[1]

Introduction

The Victory Plan of 1941 was the blueprint for the general mobilisation of the US Army and the operational concept by which the US would prosecute the Second World War. This plan predicted capabilities, units and the future organisation of an army that did not yet exist, defined combat missions for a war not yet declared, and determined the expansion requirements for industries that were still committed to peacetime manufacturing. It achieved all this with remarkable accuracy.

The architect of the plan was a single major—a member of the US Army's War Planning Department named Albert C. Wedemeyer. Wedemeyer's ability to develop grand strategic ideals and articulate them in a plan was the product of intellect, experience and professional military education. Wedemeyer used his more than 20 years' experience, education and studies to peer into an indistinct future and develop a strategy which would see the US achieve victory against the Axis powers.[2]

The aim of this article is to examine the development of the Victory Plan of 1941. In this example of strategic planning, the plan itself and the man who developed it are undoubtedly linked and must both be examined in order to develop a fulsome perspective on its significance.

The development of Wedemeyer as a strategic thinker

Albert Coady Wedemeyer had seemingly reached the end of his undistinguished career when he reported for duty to the War Plans Division in the late spring of 1941. His only career distinction had been a negative one: as a junior officer, he had been court-martialled for drinking. He had spent 20 years as a junior officer and had only recently been promoted major. He had never commanded above a rifle company.

As unremarkable as his career might have appeared at that time, Wedemeyer possessed an extraordinary grasp of grand strategy and a clear perception of how to apply it. With limited practical experience, he developed his expertise through professional and military education and enormous personal drive, largely in the period between the First and Second World Wars. In Wedemeyer's case, many years of routine military service masked steady intellectual growth.

Wedemeyer grew up in the US, spending most of his childhood in Nebraska. His Jesuit schooling developed his ethical and moral foundations and reinforced the need to accept personal responsibility. His father was a voracious reader and encouraged his son to form the habit of 'kaleidoscopic' reading, which would be followed by the Socratic practice of serious discourse based on the material being read.[3]

Wedemeyer graduated from the US Military Academy in 1918 and undertook several instructional postings and aide-de-camp positions, seeing service in China, The Philippines and the US. In 1936, Wedemeyer was assigned as a student to the German Army's *Kriegsakademie*, where he observed the 1938 armoured manoeuvre exercises, immersed himself in German military studies, and even had the opportunity to meet and talk with General Ludwig Beck, Chief of the German General Staff.

The *Kriegsakademie* curriculum focused heavily on the strategic factors of war. It emphasised the relationship between what are now commonly referred to as the elements of national power, with a deep

acknowledgement that war is an instrument of national strategy.[4] The *Kriegsakademie* also stressed the relationships that exist between technology and manoeuvre, the importance of military history and the practical application of this history through staff rides.

Wedemeyer spent some time attached to a German anti-tank unit and even exercised command of a *Panzerabwehrhrkompanie* (anti-tank battalion). He also had the rare opportunity to study and employ German manoeuvre doctrine, which left him deeply impressed. Wedemeyer was struck by the depth of professional knowledge among the officer corps throughout the German Army, particularly their knowledge of the French Army. Furthermore, he later became friends with General Ludwig Beck, and was a regular dinner guest when the two would engage in discussion of the strategic issues of the day.[5]

On his return to the US in 1938, Wedemeyer wrote a report on his experiences to the Army Chief of Staff, who in turn distributed it to other senior staff. The report attracted the attention of the Chief of the War Plans Division, Brigadier General George C. Marshall.[6] Marshall immediately summoned Wedemeyer, who informed the general of Germany's determination to avoid a repetition of the stalemate of the First World War, the German plan to increase tempo in battle through the use of armoured and mobile forces, their 'avoid at all cost' approach to trench warfare, and the use of armoured forces and tactical aviation to facilitate deep-turning envelopment manoeuvres directed at objectives far beyond the battle area. Despite initially refusing an offer from Marshall to move into the War Plans Division, Wedemeyer was eventually assigned there in May 1941 as a member of the Plans Group.

Personal experience, a classical education, professional schooling and influential personal relationships all contributed to Wedemeyer's ability to serve the Army as a strategist. His time in Asia had given him a grasp of warfare in the Far East, much as his experiences in Germany informed his strategic views on the West. He came to regard the Army as a complex system, understanding its missions, operations, and the functioning of its headquarters and staff. He was also one of the few American officers who understood the battle doctrine of a nation that would soon become the chief enemy of the US.

Wedemeyer's professional reading was probably the most profound factor in the development of his strategic studies. He started with Clausewitz as a foundation for military strategy. He insisted on Sun Tzu as a way to understand the elemental aspects of war. He also saw the immense value of studying *Instructions for Generals* by Frederick the Great.[7] Ardent du Picq, Colmar Von der Goltz and Sir Halford J. Mackinder were also enormously influential. To Wedemeyer, these texts reinforced the notion of war as a political phenomenon, wherein:

> [S]trategy, properly conceived, thus seemed to require a transcendence of narrow military perspectives that the term traditionally implied. Strategy required a systematic consideration and use of all of the so-called instruments of policy — political, economic, psychological, *et cetera*, as well as the military in the pursuit of national objectives. Indeed the non-military factors deserve unequivocal priority over the military, the latter to be employed only as last resort.[8]

As important as all these things were in the development of the mind of Albert Wedemeyer, they were still nonetheless secondary influences. His personal character, his value of knowledge for its own sake, his naturally enquiring mind and his reading habits were all a product of his upbringing, education and professional officer mentoring.

All the men inside George Marshall's War Plans Division were bright, intelligent and dedicated professionals, none of whom stood out from the other. In Wedemeyer's case, however, chance and opportunity would present him with a very difficult task. His intellect, education, experience and the support of men such as Marshall made him perfectly suited to draft the strategic estimate that would become the baseline for national mobilisation and prosecution of a global, total war.

The requirement for a Victory Plan

> The Army used to have all the time in the world, and no money; now we've got all the money and no time.
>
> General George C. Marshall, January 1942 [9]

When Wedemeyer reported for duty in the War Plans Division in 1941, the US was in the midst of a serious political debate between those who sought to avoid joining another European war and regarded America as a regional power, and those (led by President Roosevelt) who saw the US as a global superpower which had an obligation to commit to a war against Germany and deny that country the hegemonic status it so desperately sought. For a planner such as Wedemeyer, it was politically dangerous to speak too definitively about military preparations for a war against Germany.

Lacking specific guidance, Wedemeyer was left to surmise how American national policy might look once the nation committed to war. During this time, Americans were still extremely wary of large standing armies, and Congress had even gone so far as to establish a *Neutrality Act* that remained in force until as late as 1937, declaring that the US had 'no national interests beyond the Americas'.[10]

In 1940, two significant events gave Wedemeyer the clarity he needed. The first was the appointment of Henry Stimson as the Secretary for War in June 1940.[11] Stimson was a passionate anti-fascist and was convinced that the US could be attacked at any time. He believed that the US had a moral responsibility to provide arms to France and Britain, and rapidly build an army and navy in order to secure the western hemisphere.

The second event was the invasion of France. With the fall of France, the political leadership of the US now saw war with Germany as unavoidable.[12] Despite the development of the various operational concepts known as the Rainbow Plans in 1938, there was no overarching plan to generate the military forces needed to execute such plans.[13] In the preceding inter-war years, the state of the Army had deteriorated to such an extent that the then Chief of Staff of the Army declared that 'the United States has voluntarily made itself even weaker than the Versailles Treaty had made Germany. Our nation is militarily impotent'.[14]

Marshall sought a 'clear-cut strategic estimate of our situation' on which to base a mobilisation plan.[15] He knew that industrial production was dependent on efficiency: a thousand rifles could be produced in the same time as a hundred if industry was given specific requirements early enough.[16] What was needed was a strategic plan that would determine the production requirements, their priorities and their production scales in sufficient detail to allow the rapid expansion of the American Army and ongoing support to the US allies through Lend-Lease, without negatively impacting on the broader economy.[17]

This guidance was thus given to the War Plans Division. The only problem that remained was to find the right planner who had the skills to perform the task in a very short period of time. Eventually, the task fell to Albert Wedemeyer.

The strategic estimate

> It would be difficult to exaggerate Wedemeyer's impact as a strategic planner during 1941.
>
> D. Clayton James[18]

Wedemeyer's task was to calculate the nation's total production requirements for the defeat of the 'potential enemies' of the US. He would be given only 90 days to complete this extraordinary task. He would be given his own office, his own secretary (unprecedented for a field grade officer) and unfettered access to General Marshall as well as his ongoing trust. This included the opportunity to undertake a 'morning walk' (from Marshall's front door to his car). As Wedemeyer later recounted:

> General Marshall stopped and looked at me. He said 'Wedemeyer [he never called me Al], don't ever fail to give me the benefit of your thinking and your experience. You will be doing a disservice if you did otherwise'. If he had asked me to jump into Niagara Falls after that I would have done so for him. I felt that here is a man—a great man—giving me that latitude and being so fair about it.[19]

Although Wedemeyer had all the military support he could hope for, he was nonetheless constrained by the sensitivities of his work. National cultural reservations about the appropriateness of professional military officers planning industrial and societal mobilisation meant that there could be no leak to the media. Despite his ability to consult widely, Wedemeyer often had to conduct his enquiries in such a manner as to conceal their real purpose.

His first step was to outline and define the nature of the problem that he sought to solve. In order to calculate the nation's ultimate production requirements for war, Wedemeyer would have to determine the size and role of the military forces that America would field in battle. The size and function of these forces were directly related to their missions and therefore Wedemeyer would also need to estimate the type of missions that these forces would be likely to conduct in order to ensure they would be properly equipped. This would require the development of a military strategy. This, in turn, led to a series of questions, the answers to which would form the basis of his estimate:

> What is the national objective of the US?

> What military strategy will be devised to accomplish that national objective?

> What military forces must be raised in order to execute the strategy?

> How will those military forces be constituted, equipped and trained?

Wedemeyer realised that there was little strategic guidance beyond the sweeping aims of the Monroe Doctrine.[20] Moreover, he concluded that almost all government planning was short-term and *ad hoc*. He therefore had to draft his own interpretation of the US' national objective. He eventually concluded that it was 'to eliminate totalitarianism from Europe and, in the process, to be an ally of Great Britain; further, to deny the Japanese undisputed control of the Western Pacific'.[21] He put this to Marshall, who concurred with his assessment.

With an agreed national objective, Wedemeyer could then outline the military strategy necessary to accomplish it. Despite the existence of the Rainbow War Plans, these were insufficient as a military strategy because they failed to properly account for the true nature and scale of the German threat—her size, her military forces and her ambitions. Wedemeyer drew on his own experiences as well as those of a recently-returned US Defense Attaché to calculate the true capability of the German Army.

In addition, Wedemeyer had to explain in military terms why Germany presented the greatest threat to the US when Japan, Italy and the Vichy French were also hostile to her sovereignty and interests. Wedemeyer also (correctly) foresaw that Germany would likely invade the Soviet Union. It was in American interests, therefore, to extend the Lend-Lease program to the Soviets to allow them to resist and attrite the German Army committed to that theatre.

In defining his military strategy, Wedemeyer concluded that the US would need to build a powerful navy and merchant fleet; integrate strategic bombing and 'air warfare' into all operational concepts; achieve 'physical proximity' through the securing of advanced bases; and weaken the German Army by forcing it to over-extend. This would set the conditions for Germany's eventual destruction in Europe by the combined allied armies.

Once Wedemeyer had a sense of the military strategy, he was then able to describe the size and composition of the forces required to achieve his strategy. This would, in turn, define the scale of industrial mobilisation required to generate the capability. Wedemeyer would need to identify the number of operational theatres, the lines of supply, and the amount of raw materiel and manpower needed to sustain the war over many years. Also of critical concern was an understanding of the manpower 'tipping point' which, if exceeded, would remove too many men from American society for it to continue to function.

Wedemeyer also understood that a maximum effort would ensure that the war would and could be won in the shortest time possible. He was now able to move his planning to a more prescriptive process: to define the number and types of Army divisions needed to defeat Germany, as well as the war materiel required to support them. His military strategy also became an important force generation tool for the Department of the Navy, which was acting in parallel in attempting to build a navy and expand the Marine Corps.

Planning and assessment

Following the development of his military strategy, Wedemeyer estimated that there were approximately 8.5 million men available for military service in the Army. Due to his critical time constraints, Wedemeyer

could not wait for Army General Staff decisions on organisation and force structure. He needed to understand the divisional structures likely to be employed because these formations alone informed the types and quantity of materiel needed to build the total force. At stake was the fundamental issue of how many Army divisions would be required.

The need to calculate Army divisions was based Wedemeyer's very simple maxim that 'military operations must be planned with the enemy's capabilities in mind'.[22] Using the fighting potential of a German division as a unit of measure, Wedemeyer reasoned that the Axis could build a total force of 350 divisions in the summer of 1941. He anticipated that, by July 1943, this number could grow to over 500 divisions. It was expected that up to 90 of these could be mechanised or armoured divisions. He concluded that the US Army could have to face up to 12 million Axis soldiers in the European theatre alone, amounting to as many as 500 divisions.

Based on the need to build a numerical superiority of 2 to 1 (as per American doctrine), the allied powers would have to field up to 900 divisions—a force totalling around 25 million men. While Wedemeyer understood that Germany would be materially weakened by the maritime and air blockades enforced throughout Europe, he expected that America's European allies (excluding the Soviet Union) would not be capable of providing more than 1 million men at the very most.

It would, therefore, be up to the US alone to find the manpower necessary to build the force required to defeat Germany. Noting that he only had 8.5 million men as a basis on which to build the Army (of which 2.1 million men were already earmarked for service in the Army Aviation Corps), Wedemeyer realised that he had to generate a force which was capable of overcoming German numerical superiority.[23]

Wedemeyer passionately believed that offensive action lay at the heart of victory in war. He considered the Army in desperate need of radical restructure. Like his German counterparts at the *Kriegsakademie*, Wedemeyer was an avid believer in the work of J.F.C. Fuller, who emphasised speed and shock action through the use of armoured forces as essential ingredients. Wedemeyer had thus to prepare the Army for a 'war of movement' in which the early decisions sought in battle would ultimately determine the outcome of campaigns and operations.[24]

These beliefs highlighted the need to build American divisions that were predominantly mechanised, with the armoured division to be used as the primary offensive tool. In addition, all divisions must also possess the ability to integrate tactical aviation, joint fires, and rolling logistics as intelligent force design focused specifically on reducing the demands on manpower. Wedemeyer regarded mobility as a vital force multiplier, with mechanised and armoured divisions the units of real offensive utility that the US would need to generate in order to defeat the Axis without achieving numerical superiority.

Despite his focus on defeating Germany in Europe, Wedemeyer was also required to remain within the extant planning framework of the Rainbow Plans. This meant that he had to build an army capable of defeating the Axis and of contributing to hemispheric defence as per the Monroe Doctrine, while also retaining sufficient capability to deter a Japanese threat in the Western Pacific.

Small Army garrison units were thus allocated to Atlantic outposts, with Wedemeyer estimating that 32,144 personnel would be required for this role.[25] Wedemeyer's service in The Philippines convinced him that the Western Pacific island chain was indefensible against a Japanese attack, and that the Army should instead concentrate its efforts on denying key Pacific ports to the Japanese for as long as possible. A 56,000-strong garrison force was also to be established in the Hawaiian islands.

With close to 200,000 troops committed to the Rainbow Plan missions outside Europe, and with 2.1 million men taken into service with the Army Aviation Corps, 6 million men were left for operations against the German Army in Europe.[26] Wedemeyer planned to use part of this force to secure the necessary advanced bases in the northern Atlantic and European theatres, specifically in northern England, Scotland and Iceland, with a total of 105,000 men.

He further divided the Army by estimating that 3.9 million men would be needed to form combat arms, and 1.8 million men would form the Army's service troops. Wedemeyer could therefore build an army for service in Europe that constituted some 215 divisions, based around five field armies.[27] Each field army

would be constructed around a core of nine 'triangular' infantry divisions. The key offensive tool in each army lay in its armoured and mechanised divisions. The approximate force structure was:

US 1st/3rd/4th Army	2nd/5th Army (Strategic Reserve)
Army HQ + Service Troops	2 x Army HQ + Service Troops
3 x Corps HQ + Corps Troops	10 x Corps HQ + Corps Troops
2 x Armoured Corps HQ	14 x Armoured Corps HQ
9 x Triangular Infantry Div	27 x Triangular Infantry Div
4 x Armoured Div	53 x Armoured Div
4 x Motorised Inf Div	51 x Mechanised Inf Div
2 x Mountain Div	4 x Motorised Inf Div
2 x Airborne Div	6 x Mountain Div
8 x separate Tank Bn	3 x Airborne Div
10 x Tank destroyer Bn	86 x separate Tank Bn
10 x Anti-tank Bn	290 x Tank Destroyer Bn
5 x Parachute Inf Bn	262 x Anti-tank Bn
2 x Heavy Artillery Regts	22 x Parachute Inf Bn
9 x Mdm and Light Artillery Bn	2 x Heavy Artillery Regts
12 x Aircraft Warning Regt	9 x Mdm and Light Artillery Bn
20 x Anti-Aircraft Regt	29 x Aircraft Warning Regt
10 x mobile Anti-Aircraft Bn	129 x Anti-Aircraft Regt
	133 x mobile Anti-Aircraft Bn

Figure 1. Wedemeyer's proposed force structure

Each army was given a 'European' mission as well as a global contingency mission. Some 61 divisions were armoured, 61 were mechanised, 54 were infantry, 4 were cavalry, 10 were mountain, and 7 were airborne. The remaining divisions were allotted to hemispheric defence and other global tasks as defined by the Rainbow Plans.[28] The final manpower commitment was 8,795,658 men (2.05 million for Army aviation, 3.745 million for total active units, with 3 million men to be held as civilians in strategic reserve).[29] All Services concurred with the plan, which was later endorsed by General Marshall and, eventually, the President himself.

The success of the Victory Plan

Wedemeyer's plan for victory was critical for the US in the Second World War for a number of reasons. First, it complemented the extant Rainbow Plans, primarily because the estimate was based on the need to achieve the operational concept laid out in these plans. This consistency in thinking would become vital through the early phases of the war because of the military industrial base's need for certainty and surety in planning. This would allow the US to meet full mobilisation of its industrial capacity sooner than if there had not been a clear estimate of resource requirements in the early phases of expansion. The plan was never static, however, with alterations made immediately after Japan attacked Pearl Harbor in December 1941.

In the end, the actual number of divisions raised by the US in 1943 was a mere 90.[30] The main cause of this shortfall was the division 'slice' which meant that there were far more men per division than anticipated. Wedemeyer had originally envisaged a strength of 30,000 men per division. The actual figure was between 40,000 and 60,000 men.[31] The cause of this rapid increase in manpower was the increasing role of logistics and administration required in order to field a modern fighting division.

There were also many lessons that the US had learnt by 1945 that Wedemeyer could not have anticipated in 1941. These included the impact of Lend-Lease on American production priorities, which saw the US Army compete with Britain, the Soviet Union, the Netherlands, Brazil, China, Norway and the (Free)

Italian forces for equipment and materiel. The Soviet successes on the western front also reduced the scale of American divisions required for Europe now that the Soviet Union had begun to fully mobilise.

Despite the fact that his estimate for the number of divisions was incorrect, Wedemeyer's manpower prediction was remarkably accurate. By 1945, the US had committed 8.1 million men to the war, just short of the 8.7 million that he had estimated some four years earlier.[32] With an understanding of its manpower constraints in 1941, the Army had been able to operate within its resources and fight the war accordingly.

Wedemeyer also correctly identified the need to build a strong and effective navy capable of supporting land operations. He was an advocate of joint planning and understood that mobilisation could not be achieved by a single Service in isolation. In addition, Wedemeyer was aware of the need to protect the American industrial base from manpower shortages and thus sought only to take sufficient manpower to achieve victory. Of equal concern for him was the need to maintain a critical mass of men in the national economy.

Wedemeyer saw his nation's military strength not as a battle or a campaign but rather as a series of units and capabilities lined up on the edge of the battle. He saw mobilisation, industrialisation and military operations as a single contiguous effort. This was especially important in attempting to overcome the manpower superiority of the Germans. He understood the need to compensate for the German manpower advantage by increasing the manufacture of aircraft, mechanised and armoured vehicles and communications, all of which lie at the heart of modern warfare. One of Wedemeyer's great achievements was his grasp of modern warfare—he built an army capable of fighting effectively in the current conflict, as opposed to the last one.

Conclusion

The Victory Plan was a 14-page mobilisation plan designed to build an army capable of winning a world war without impacting on the nation's economic capacity to wage war for an indeterminable period. It was intended to take the US beyond the Monroe Doctrine and allow it to secure its interests outside the western hemisphere and across the world at large. It sought to defeat Germany through force of arms, and would ultimately establish the US as a global economic and military power in the years after the war.

This plan could not have been written with such remarkable accuracy and insight without the experience and professional education of its author, Albert Wedemeyer. Wedemeyer had spent his service life focusing on developing his professional military knowledge. He learned for the sake of learning, and was encouraged to do so by a series of senior officers who intuitively understood the value of knowledge and how it could be applied to military affairs.

Wedemeyer also knew that attention had to be given to the non-military aspects of national power if the US was to achieve ultimate victory in war. His longstanding preoccupation with strategic thought and his extensive knowledge of military history and economics gave him a profound insight into what was required to realise the ambitions of US war plans, and the importance of military technology as a means to achieve decisive combat weight in battle.

Wedemeyer's ability to grasp elements of strategy, policy, politics and practical military theory in the context of the need to wage total war against a global threat meant that he could generate a plan capable of surviving the hostile political climate of the day. Despite there being no army capable of meeting the plan's objectives, Wedemeyer nonetheless drafted a roadmap which enabled the US to build such an army with the least disruption to the remainder of the economy and society, so critical to the period during and after the war.

And he did all this in less than 90 days.

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Notes

1   Charles Edward Kirkpatrick, *An Unknown Future and a Doubtful Present: writing the victory plan of 1941*, Center of Military History, US Army: Washington DC, 1992, p. 5.

2   There has been some revisionist perspectives from US scholars in the last 10 years questioning the true value of Wedemeyer's contribution. Dr Gordon Rudd, a respected academic based at US Marine Corps' School of Advanced Warfighting in Quantico, Virginia has provided the author with sufficient context on this debate and still assesses that Wedemeyer's contribution was significant. He surmises that there is insufficient academic evidence at this time that seriously calls into question Wedemeyer's role in supporting General Marshall's development of the Victory Plan. For more information, see John McLaughlin, *Albert Wedemeyer, America's Unsung Strategist in World War II,* Casemate Publishing: Philadelphia, 2012.

3   McLaughlin, *Albert Wedemeyer, America's Unsung Strategist in World War II*, p. 6.

4   Elements of national power, as defined by the US State Department, are diplomacy, information, military and economy.

5   Albert Coady Wedemeyer, 'Anti-Tank Defense', *Field Artillery Journal*, May 1941, pp. 258-72.

6   Forrest C. Pogue, *George Marshall: ordeal and hope*, Viking Press: New York, 1966, p. 141.

7   See, for example, Frederick the Great (translated by Thomas R. Phillips), *Instructions for his Generals*, Dover: New York, 2012.

8   Keith Eiler, 'The man who planned victory: an interview with Albert C Wedemeyer', *American Heritage*, Vol. 34, No. 6, 1983, p. 38*.*

9   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 35.

10   See Walter Millis, *Arms and Men: a study in American military history*, Harper: New York, 1962.

11   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 40.

12   Henry Stimson, *On Active Service in Peace and War*, Harper Publishing: New York, 1948, p. 366.

13   Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilisation in the United States Army 1775-1945*, Department of the Army, Pamphlet No. 20-212, Washington, June 1955, pp. 560–61.

14   Peyton C. Marsh, *The Nation at War*, Doubleday: Garden City, 1932, p. 341.

15   Pogue, *George Marshall*, p. 140.

16   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 52.

17   This would include munitions requirements and most major war materiel systems.

18   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 55.

19   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 56.

20   The Monroe Doctrine was a US policy introduced on 2 December 1823. It stated that further efforts by European nations to colonise land or interfere with states in North or South America would be viewed as acts of aggression, requiring US intervention.

21   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 63.

[22]   Adrian Carton de Wiart, *Happy Odyssey*, Jonathan Cape: London, 1950, p. 259.

[23]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 92.

[24]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 63.

[25]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 93.

[26]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 95.

[27]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 98.

[28]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 100.

[29]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 115.

[30]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 106.

[31]   Kirkpatrick, *An Unknown Future and a Doubtful Present*.

[32]   Kirkpatrick, *An Unknown Future and a Doubtful Present*, p. 100.

The Thirsty Dragon: the regional impact of China's water security requirements [1]

Colonel Natasha Fox, AM, CSC, Australian Army

Introduction

Water is essential for human well-being and continued socio-economic development. Climate, poverty, hunger, health and finance are interconnected through water. The global demand for water is projected to increase by 55 per cent by 2050 as a result of the requirements of industry, energy production and domestic use.[2]

China has 20 per cent of the world's population but less than seven per cent of its freshwater resources; by 2030, it is predicted that China's freshwater shortage will exceed its current annual consumption.[3] Faced with such shortages, countries typically have no choice but to make trade-off decisions in relation to usage, quality and quantity. Indeed, in order to maintain its economic growth, China has already done just that, particularly as a result of the depletion of a number of its aquifers and the serious pollution of other water sources.[4]

In a 2013 report, the Asian Development Bank noted that growing economies, such as China's and that of other emerging Asian countries, experience the paradoxical trade-off decision of:

> [N]eeding to boost food, industrial and energy production with a decreasing per capita availability of water … partly because the natural resources are limited and partly because of the persistent use of environmentally debilitating modes of production in the region, including over extraction and/or pollution of basic resources.[5]

China's economic growth cannot be sustained without water security. Water security is defined as 'the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water related risks to people, environments and economies'.[6] The nexus between water security and socio-economic requirements is contained in the definition of comprehensive security; namely that 'a nation's security is no longer the traditional "national defense" (military security) but has economic, environment and human dimensions' as well.[7]

This article contends that in the next ten years, China's water security requirements have significant potential to impact on stability in the region, broadly defined as the Indo-Pacific.[8] To support this contention, it will demonstrate why water security is a strategic security issue for China, analyse China's responses to its water security requirements, and highlight the implications for the region of actions already undertaken by China, particularly in relation to India and countries on the Mekong River. It concludes by offering some options to reduce tensions that otherwise may result in regional instability.

Water is a strategic issue for China

China's water resources are unevenly distributed. The north of China is considered China's 'breadbasket', with 64 per cent of its land under cultivation. However, this area has insufficient and variable rainfall, with only 19 per cent of the country's water resources, while the south of the country often experiences serious flooding.[9] China's population is predicted to continue to grow until 2030, peaking at 1.5 billion, which will place further demand on its water resources.

Coupled with this, China faces issues associated with urbanisation, including a diminishing workforce in its agricultural sector and a reduction of available arable land, resulting in increased reliance on food imports. The agricultural sector remains a significant user of water, with the north of China reliant on depleting aquifers or on water provided by diversionary projects. In addition, 40 per cent of China's freshwater rivers are seriously polluted, with 20 per cent containing water too polluted for human consumption.[10]

The availability and quality of water is seriously impacting the Chinese economy, with the UN estimating that in 2005 China experienced 'an annual loss of $28 billion in industrial output'.[11] The World Bank similarly estimated in 2009 that these issues were costing China 2.3 per cent of its national GDP,[12] while another report contended that the quantity and quality of water in China posed a threat to 'food security, poverty reduction and future ecological sustainability'.[13]

For its part, China has acknowledged the importance of water security as a continued requirement for economic growth, illustrated through the introduction in 2002 of China's *Water Law*, which was enacted:

> [F]or the purposes of rationally developing, utilizing, conserving and protecting water resources, preventing and controlling water disasters, bringing about sustainable utilization of water resources and meeting the need of national economic and social development.[14]

Water security will increasingly be a strategic, socio-economic challenge for China, particularly over the next ten years, as population growth peaks and there are increased domestic demands for the economy to be sustainable. Fortunately, China has a geographical advantage in that almost all of the major rivers of Asia originate in glacial run-off from the Chinese-controlled Tibetan Plateau. The Yangtze and Yellow Rivers flow into China, the Mekong River flows to Thailand, Vietnam, Laos and Cambodia, the Salween and Irrawaddy Rivers to Myanmar, and the Brahmaputra and the Sutlej Rivers to India, Pakistan and Bangladesh.

However, while these rivers originate in China, they are considered 'trans-boundary' water resources, that is, 'freshwater (surface and groundwater) that flows across national or sub-national boundaries'.[15] To add further complexity to the water security issue, climate change is impacting the glaciers of the Tibetan plateau, and the longevity of glacial melts, as a source of water, is problematic.[16] Therefore, any action that China takes on trans-boundary rivers, for its national water security requirements, will have significant consequences in relation to the availability and future sustainability for downstream countries. It is this issue that makes China's water security requirements a strategic issue for the region.

China's development projects

China has undertaken significant infrastructure development in relation to water resources, demonstrating its intent to achieve water security, particularly for energy, irrigation and mineral resource extraction.[17] In a number of cases, however, it would seem that China's actions in relation to trans-boundary rivers have occurred with little transparency and inadequate consultation with neighbouring countries.[18]

In particular, China has invested in significant damming and water diversion projects. For example, it has built the well-known Three Gorges Dam on the Yangtze River, undertaken a major water transfer project to divert 44.8 km^3 of water from the south of China to the north at a cost of US$40-60 billion, has plans to build three major dams on the Brahmaputra River, and has already built three of 15 planned hydroelectric dams along the Mekong River.[19] Prior to 1949, China had 22 dams—today, the total number is estimated at +90,000.[20]

China's water diversion projects often have significant adverse impact on downstream countries and consequently impact on state-to-state relations. During the period 2000-2005, for example, India experienced the physical effects of China having built upstream dams, with a number of floods in Himachal Pradesh and Arunachal Pradesh the result of unexpected upstream dam water releases. China provided no prior notification to India of the releases, precluding the implementation of flood mitigation measures. The breach of China's Yiong Dam on the Sutlej River in mid 2005, for example, resulted in 35,000 homeless people and 26 dead.[21]

In 2006, India raised with China the lack of notification of dam breaches, seeking more transparency in environmental impacts and risk assessments.[22] However, Chinese officials were reportedly only prepared to discuss hydrological data, and were not willing to enter into any water sharing or dam construction agreements. So, despite the significant social impact of the floods, India's diplomatic actions to redress these issues had limited effect.

Furthermore, China has already built one dam on the Brahmaputra River, and has plans to build an additional three, which collectively will have considerable ramifications for India over the next ten years.[23] The Brahmaputra is a significant water source for India, and it is estimated that the current and planned Chinese dams will result in '[a fall of] as much as 60 per cent of the total water flow … [and] that fifteen to twenty small and medium rivers dependent on the Brahmaputra will die if China's plan succeeds'.[24]

India faces similar population growth, urbanisation, energy demand and economic challenges to China.[25] Therefore, with both India and China relying on the same water source, and China already acting unilaterally, further and heightened competition for water resources seems inevitable. Moreover, such competition may well exacerbate a number of geopolitical issues that already exist between China and India, particularly in the Arunachal Pradesh region, in turn increasing the likelihood of regional instability.

Elsewhere, China's actions are being replicated on the Mekong River, with significant potential impact on Cambodia and Vietnam, and the estimated 60 million people who live in the lower Mekong Basin, where:

> [T]he river is essential for drinking water, food, irrigation, hydropower, transportation and commerce. Nearly 2% of the total world catch and 20% of all fish caught from inland waters of the world are produced in the lower Mekong fisheries. Nearly half of Cambodia's people rely on the Mekong River, and the delta supports more than half of Vietnam's rice production and one third of Vietnam's GDP.[26]

Therefore, any water diversion of the Mekong River has the potential to impact the livelihood of a substantial proportion of the population, as well as the economy, of several countries. It is China's approach to the management of trans-boundary rivers, often at the expense of other stakeholders, which clearly has considerable capacity to exacerbate existing geopolitical suspicion and tension, and impact regional instability.

To date, China has not signed any international water treaties, nor joined the Mekong River Commission—established by Cambodia, Laos, Thailand and Vietnam in 1995—despite the significance of the Mekong River to the livelihood of downstream countries.[27] The Commission was designed as a forum to 'promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well being' between the member countries.[28] Furthermore, China was one of only three countries that voted against the 1997 UN Convention of Non Navigational Use of International Waterways, a universal treaty on the management of freshwater resources.[29]

Instead, China takes a sovereign or unilateral approach to water security, asserting the right of states to harness the potential of national resources, while rejecting the notion that states have the right not to be adversely affected in their development potential by the activities of upstream riparian countries.[30]

Nevertheless, there have been some minor concessions in China's behaviour. China attended its first Mekong River Commission summit in 2010 and signed a memorandum of understanding with the Commission on the provision of hydrological data from Yunnan province, aimed at preventing the loss of life during the flood season.[31] However, China's preference, at least in relation to the Mekong River, seems to be bilateral economic and energy deals with individual countries,[32] which largely undermines the Mekong River Commission as an effective water management forum.

More broadly, China has proposed further dialogue and partnership through ASEAN-China Free Trade Agreement collaboration on issues such as 'environmental impact assessments … and joint work on regional natural disaster reduction capacity building'.[33] However, to date, the dialogue has related to information sharing about hydrological data and environment information, and does not extend to agreements, treaties or cooperation on water quality or quantity issues, reinforcing China's unilateral approach to water security.

So is conflict likely?

While China's unilateral actions and lack of transparency over the use of trans-boundary river sources may contribute to regional instability, no modern state has ever declared war on another solely over water. A 2014 report from the UK Ministry of Defence, however, has highlighted the increased potential

globally for confrontation over shared water resources,[34] while another report, based on a study of almost 2000 water-sharing arrangements in the period 1948 to 1999, showed that 28 per cent resulted in conflict, while two-thirds featured ongoing cooperation.[35]

The historical evidence, therefore, would suggest that water-sharing arrangements, either through treaties or dialogue, have a useful role in reducing the likelihood of confrontation. An example of a water treaty that has enabled cooperation and withstood geopolitical state conflict is the Indus Waters Treaty, brokered by the World Bank between India and Pakistan.[36] India also has water-sharing arrangements with Nepal, Bhutan and Bangladesh. While these arrangements may favour India, it can be argued that the existence of the arrangements is 'conducive to stability rather than conflict'.[37]

An alternative perspective is that China can be regarded as a 'hydro hegemon', and that 'its position in the trans-boundary river systems and its potential for water resource exploitation ... prevents war ... because non-hegemonic states usually comply with the order preferred by the hegemon'.[38] However, examples such as the Indus Water Treaty demonstrate that water treaties can provide a practical and rational legal framework for resolving disputes, even when they involve a regional hegemon such as India. Contrarily, the absence of such agreements or institutional forums for resolving disputes typically creates an environment of uncertainty and contributes to existing geopolitical regional instability.

Therefore, even though no physical conflict over water has occurred between China and India or countries in the Mekong River basin, it is assessed that it is likely, within the next decade or so, to become a source for potential conflict, particularly as water becomes an increasingly scarce and valuable resource. As asserted by Uttam Sinha:

> [T]he absence of a cooperative arrangement in most Asian trans-national basins is making trans-boundary water competition a major security risk.... Institutionalized cooperation ... is needed in order to underpin strategic stability, protect continued economic growth and promote environmental sustainability.[39]

The way forward

Because water security is a potential future source of conflict, the region should work towards achieving a trans-boundary rivers management framework. Potentially, this could occur through security dialogue discussions at either the East Asia Summit or the Shangri La Dialogue (conducted regionally under the auspices of the UK-based International Institute for Strategic Studies).

Any dialogue would need to develop a framework covering dispute-resolution mechanisms, and principles for sustainable development, cooperation and transparency to reduce the likelihood for conflict. Moreover, rather than considering trans-boundary rivers as sovereign resources, any framework should also consider the rivers through a regional lens, which would require a multilateral approach involving input and collaboration between all countries through which the rivers flow.

While China in particular may well be wary of involving non-regional parties, especially the US, the US Agency for International Development has particular expertise in similar issues, and would be well suited to join with the Mekong River Commission in joint planning and the development of sustainable management practices.[40] As asserted by a UN report in 2006:

> Water is not a zero sum game.... Two overarching challenges define trans-boundary water governance strategies.... The first is to move beyond inward-looking national strategies and unilateral action to shared strategies for multilateral cooperation.... The second is to put human development at the centre of trans-boundary cooperation and governance.[41]

Furthermore, it could be expected that in the years ahead, continuing research and investment in new technologies will be able to deliver alternative water sources through mechanisms such as desalination, at reduced cost of production, which could provide alternatives to trans-boundary river damming or diversions, and assist with water security challenges.[42]

Conclusion

Water security is a strategic issue and a critical element of national security. It has been argued in this article that water security will increasingly become a key issue for countries of the Indo-Pacific region, both because it has the potential to contribute to already existing geopolitical tensions and as a potential source of conflict in its own right.

Of particular concern is that China's water security requirements will increasingly impact on the region, specifically with India and countries of the Mekong River basin over the next decade. China's unilateral approach to trans-boundary rivers, its lack of transparency over its future plans, and the absence of water treaties contribute to regional instability. Furthermore, China's behaviour, as the 'thirsty dragon' of the region, creates an environment of uncertainty and water resource competition. This, combined with the physical effects of water diversions and damming, has the potential to exacerbate geopolitical issues within the region.

Although water security is a potential source of conflict and can cause regional instability, it has also been argued that history would suggest that modern states do not engage in conflict over water alone. However, in the next ten years, water security will be further compounded because of population growth in the region and the uncertain impact of climate change on glacial activity in the Tibetan Plateau as a source of water.

To mitigate water security as a potential source of regional conflict, the article has argued that countries should work together, either through the East Asia Summit or Shangri La Dialogue, to create a multilateral river basin management water treaty and share technological solutions for alternative methods of achieving water security. Such an approach would require China to review its current unilateral approach to trans-boundary water resources. And it may require the involvement of non-regional states, with expertise in such issues, to help facilitate the strategic dialogue.

Colonel Natasha Fox graduated from the Royal Military College, Duntroon in 1991, into the Royal Australian Army Ordnance Corps. Her early career included postings to several corps-related appointments, an instructor at ADFA, and aide-de-camp to the Chief of Army, as well as Project Director for the dedication of the Australian Korean National War Memorial. Her more recent postings have included Headquarters Logistic Support Force, Special Operations Command, Headquarters Training Command-Army and Commanding Officer/Chief Instructor at ADFA. In 2013, she was the Director of Personnel Policy-Army.

Colonel Fox has operational experience with the UN Truce Supervision Organisation, serving in Lebanon and Syria. She also deployed on Operation SLIPPER during the period June 2012 to January 2013. Colonel Fox is a graduate of the 2003 Australian Army Command and Staff College and has a Bachelor of Arts, a Master of Business Administration (University of Southern Queensland) and a Master of Management in Defence Studies (University of Canberra), as well as being a graduate of the Australian Institute of Company Directors. She is currently attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College.

Notes

[1]   This is an edited version of a paper, titled 'The Thirsty Dragon: Will China's Water Security Requirements Impact on Stability in the Indo-Pacific Region?', submitted by the author while attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College in 2015.

[2]   UN World Water Assessment Programme, *The United Nations World Water Development Report 2014*: *water and energy*, Vol. 1, UNESCO: Paris, 2014, p. 2.

[3]   T. Hofstedt, 'China's Water Scarcity and Its Implications for Domestic and International Stability', *Asian Affairs, an American Review*, Vol. 37, No 2, 2010, p. 1.

[4]   China has had in the order of 7.4-7.7 per cent growth for the last three years; for 2015, it is predicted at 6.7 per cent. The interdependency in Asian economies, and particularly their reliance on China, makes Asia more vulnerable to any sharp slowdown in the Chinese economy: see International Monetary Fund (IMF), *World Economic Outlook*, IMF: Washington DC, October 2014 p. 2 available at <www.imf.org/external/publ/ft/weo/2014/02/pdf/text.pdf> accessed 3 March 2015. See also J. Boulter, 'Food and Water Security: China's most significant national challenge', Future Directions International website, 2013, p. 3, available at <http://www.futuredirections.org.au/publications/food-and-water-crises/873-food-and-water-security-china-s-most-significant-national-challenge.html> accessed 29 May 2015.

[5]   Asian Development Bank, *Asian Water Development Outlook 2013*, Asian Development Bank: Madaluyong City, 2013, p. 29.

[6]   D. Grey and C. Sadoff, *Sink or Swim? Water security for growth and development*, The World Bank: Beijing, 2007, p. 1.

[7]   J. Hauger, M. Daniels and L. Saalman, 'Environmental Security and Governance at the Water Energy Nexus: Greenpeace in China and India', *Journal of Asian Security and International Affairs,* Vol. 1, No 3, 2014, p. 236.

[8]   This definition is used to provide geographic and relationship context for country interactions, recognising that economic and security considerations between the Western Pacific and Indian Oceans are creating a single strategic system. The definition includes Asia and India within the Indo-Pacific region: see R. Medcalf, 'The Indo-Pacific: what's in a name?', *The American Interest,* Vol. 9, No 2, October 2013, p. 1.

[9]   B. Chellaney, *Water Asia's New Battleground*, Georgetown University Press: Washington DC, 2011, p. 36.

[10]   Boulter, 'Food and Water Security', pp. 2-4.

[11]   Chellaney, *Water Asia's New Battleground*, p. 54.

[12]   T. Lutterell, *Food and Water Security: Our Global Challenge Landmark Study,* Future Directions International: Perth, 2014, p. 29.

[13]   UN Development Programme, *Beyond Scarcity: power, poverty and the global water crisis*, UN Development Programme: New York, 2006, p. 143, available at <http://hdr.undp.org/sites/default/files/reports/267/hdr06-complete.pdf> accessed 4 March 2015.

[14]   Ministry of Water Resources, *Water Law of the People's Republic of China*, People's Republic of China: Beijing, 2002, p. 1.

[15]   C. Sadoff *et al* (eds.), *Share: managing water across boundaries,* International Union for Conservation and Nature and Natural Resources: Gland, 2008, p. 15, available at <https://portals.iucn.org/library/efiles/documents/2008-016.pdf> accessed 29 May 2015.

[16]   U.K. Sinha*, Emerging Strategic Trends in Asia*, Institute for Defence Studies and Analysis: New Delhi, 2015, p. 178.

[17]   Chellaney, *Water Asia's New Battleground*, p. 132.

[18]   N.K. Tripathi, 'Hydropower in Asia: spinning a dependence and interdependence binary', *South Asian Survey*, Vol. 17, No. 2, 2010, p. 225, available at <http://sas.sagepub.com/content/17/2/219.short> accessed 3 March 2015.

[19]   See, for example, B. Chellaney and J. Turner, *Panel Discussion Water: Asia's new battleground*, Brookings Institute: Washington DC, 2013.

[20]   Chellaney and Turner, *Panel Discussion Water*, p. 20.

[21]   Chellaney, *Water Asia's New Battleground*, p. 133.

[22]   Chellaney and Turner, *Panel Discussion Water*, p. 27.

[23]   J. Di Nunzio, *India Fast-Tracks Hydropower Dams in Response to China's Brahmaputra River Diversion*, Future Directions International: Perth, 4 December 2013, available at <http://www.futuredirections.org.au/publications/food-and-water-crises/28-global-food-and-water-crises-swa/1474-india-fast-tracks-hydropower-dams-in-response-to-china-s-brahmaputra-river-diversion.html> accessed 5 March 2015

[24]   E. Economy, 'Asia's Water Security Crisis: China, India and the United States', in A.J. Tellis, M. Kuo and A. Marble (eds.), *Challenges and Choices,* National Bureau of Asian Research: Seattle, 2008, p. 385.

[25]   Sinha, *Emerging Strategic Trends in Asia*, pp. 162-85.

[26]   Economy, 'Asia's Water Security Crisis', p. 381.

[27]   Chellaney, *Water Asia's New Battleground*, p. 273.

[28]   Mekong River Commission website, available at <www.mrcmekong.org> accessed 3 March 2015.

[29]   Hofstedt, 'China's Water Scarcity and Its Implications for Domestic and International Stability', p. 78.

[30]   Economy, 'Asia's Water Security Crisis', p. 379.

[31]   Mekong River Commission website.

[32]   China signed oil transport deals with Thailand, Laos and Burma without consulting Cambodia or Vietnam: see Economy, 'Asia's Water Security Crisis', p. 381. China promotes the trade of electricity as an example of amicable international relations, providing Vietnam and Thailand with electricity from the dams of the Mekong: see Tripathi, 'Hydropower in Asia', p. 228.

[33]   J. Mochizuki and Z. Zhang, 'Environmental Security and its Implications for China's Foreign Relations'*, Nota Di Lavoro*, 2011, p. 12.

[34]   UK Ministry of Defence, *Global Strategic Trends - Out to 2045,* 5th Edition, Ministry of Defence: London, 2014, pp. 22 and 180.

[35]   Lutterell, *Food and Water Security,* p. 79.

[36]   P. Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', *Security Challenges*, Vol. 10, No. 3, 2014, p. 103.

[37]   Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', p. 111.

[38]   Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', p. 98.

[39]   Sinha, *Emerging Strategic Trends in Asia*, p. 196.

[40]   Economy, 'Asia's Water Security Crisis', p. 382.

[41]   UN Development Programme, *Beyond Scarcity*, p. 204.

[42]   Sinha, *Emerging Strategic Trends in Asia*, p. 187.

The ADF and Strategic Culture [1]

Major Emma Broder, CSM, Australian Army

> Any state, if it is to prosper, must harmonise its strategic culture with its way of war.... A society that forgets how and why it has fought in the past and then fails to examine the way in which it might have to fight in the present and future forfeits control over its destiny.
>
> Michael Evans, *The Tyranny of Dissonance* [2]

As the ADF prepares for the next 15 years, it seeks to avoid the struggle for mission identification that occurred in the aftermath of the Second World War and the Cold War. Forging a way ahead requires an assessment of strategic environment and interests, capability deficiencies and requirements, and anticipated threats. It requires judgments on capability procurement, industry investment, facilities and operating expenses, and balancing current readiness with long-term investment. It demands decisions on personnel numbers and force structure. It entails consideration of the recruitment, preparation, morale, motivation and remuneration of personnel.[3]

Each of these factors is important in ensuring the organisation is structured and postured appropriately to meet future challenges. Yet it is strategic policy that determines the use of the ADF—how it is trained, equipped and organised—articulating strategy that deals with those areas of national policy where military factors overlap with political, economic and psychological factors.[4] This article argues that the first and most important step of the way ahead for the ADF is engagement in the development of sound strategy that links our way of war with national policy.

It identifies that friction between defence policy and practice has been an enduring issue in Australia, with praxis more reflective of strategic culture than policy, and advocates the development of a positive relationship between the Australian logic and grammar of war. Reviewing meta-trends in the operating environment, it questions the ADF's capacity for independent action and the continued applicability of geographic determinism to policy development. It then posits that a priority task for the ADF is developing the capacity to participate in the analysis of strategic issues and that senior leaders must assume a greater responsibility for engagement in Australian statecraft. The article concludes with a brief examination of some key considerations for inclusion in that strategy.

The Australian way of war

There was an appreciable wave of academic analysis of war and its place in Australian policy after the Second World War and at the conclusion of the Cold War.[5] In the aftermath of the Second World War, a relatively stable (if antagonistic) bipolar world emerged, one in which the ADF found the cost of the peace dividend high, and saw conflicts in Indonesia, Malaya and Korea. Following the end of the Cold War, a favourable global paradigm emerged but hopes that the risk of conflict had diminished were quickly proven false, with events in Namibia, Kuwait, Cambodia, Somalia, Rwanda and the Balkans ensuring the continued utility of armed forces and the new spectrum of operations in which they would be expected to perform. As cultural norms relating to the use of force continue to evolve, these periods furnish many lessons relevant to the challenges faced today.[6]

War, Clausewitz tells us, has its own grammar but not its own logic.[7] Clausewitz did not develop this idea significantly.[8] It is generally accepted that the 'grammar' refers to the objective (enduring) and subjective (changeable) natures of war, with the military as the grammarian.[9] The 'logic' is variously correlated with policy, strategy and strategic culture.[10] However, for this article, it will be considered to relate to defence policy, with politicians cast as the logicians. The link between the two—strategy—must be strong to preserve consequent military activity from becoming 'pointless and devoid of sense,' for having lost touch with the political objective.[11] Australian defence policy has a history of dislocating one from the other, resulting in an 'extraordinary paradox ... between strategic theory and operational practice'.[12]

There is little consensus over what exactly constitutes a nation's way of war. For this article, the way of war will include the military strategies, operations and tactics; that is, operational practice.[13] This must be understood with regard to the surrounding political culture and strategic culture.[14] Indeed, Michael Evans sees a nation's way of warfighting as a subset of strategic culture. The grammar of war is then translation of the national values from pure theory to actionable strategy; 'the set of attitudes and beliefs held within a military establishment about how to devise the most effective strategy and operational method of achieving the political objective of the war in accordance with national values and beliefs'.[15]

The populist conception of the Australian way of war is based in the tales of valour and hardship of the ANZACs. The developed mythology provides an effective narrative, demonstrating core values of egalitarianism, mateship, rugged individualism and independence, selflessness and utilitarianism—the Australian way of war, built on the citizen soldier, remains free of militarism. The officer corps was never founded on elitism, the 'digger' made the hero. The cultural touchstone of ANZAC remains relevant to this day. But such experiences are contextual, and it was through continued refinement in the crucible of war that the ADF developed its character, and continues to do so, although there are few studies on the matter.

Consistent themes of volunteers fighting in expeditionary settings, in a coalition, as a junior partner relying on powerful friends to support force projection came to characterise the Australian grammar through the following century—but this is not yet the full story.[16] As the ADF acquires some organic force projection capability, the Australian way of war will continue to develop, taking lessons from experiences positive and negative, and maintaining guardianship of the ANZAC heritage. Despite periods of homeland defence policy, the Australian way of war has always been expeditionary.

While the character of war changes with each engagement, the Australian way of war has developed slowly and deliberately over time in parallel with Australian strategic culture. Some might characterise it more as 'a way of battle than an actual way of war',[17] but it has its own rules, explicit and implicit, its own moral code, and its own standards.[18] The Australian way of war is grounded in the strategic culture, and the strategic culture in the values of the nation. There is significant additional scope for scholarship regarding the Australian way of warfare. As the ADF looks to the future, there would be great utility in having this coalescence of Australian military heritage and values studied in detail.

In the current and future climate, domestic and political behavioural expectations are high and the ethical and honourable performance of all members is critical to the legitimacy of the institution and operations. Consciously adhered to or not, this is an important normative organisational behavioural framework. If the construct could be deconstructed to identify the precise content of this truly organic values set, identify the system's guardians, and understand the function of the associated normative framework, then these may be vulnerable to exploitation to optimise standardised behavioural and compliance outcomes. Critically, the ADF way of war is not an elite construct but a common one.

There is little more agreement over what exactly constitutes a nation's strategic culture. The idea of linkage between culture and national security policy is not modern—classical strategists including Clausewitz and Sun Tzu recognized it in their seminal works.[19] Yet there is a vast array of opinion on how to define it, whether there is such a thing as unique national strategic culture and, if there is, then whether it is of importance in the development of strategic theory and practice.[20] While strategic culture 'may not have a direct independent and societal-specific effect on strategic choice'[21]—and, in fact, 'a wide variety of disparate societies may share a similar realpolitik strategic culture'[22]—there is increasing consensus that strategic culture may have an observable effect on state behaviour.

David Kilcullen offers an established model which accepts that 'strategic culture drives patterns of statecraft, which in turn drive military strategy'.[23] He notes that strategic culture may change slowly, that it has a special relationship with enduring circumstances and, therefore, frames issues for strategic decision makers. He also notes the normative characteristic of a nation's strategic culture—that 'even a perfect defence policy is likely to fail if it does not align with strategic culture'.[24] This accords with Evans' contention that 'modern strategy is first and foremost concerned with the task of upholding and preserving a nation's values'.[25] It is strategic culture that gives this meaning to other variables.

Strategic culture then is the 'weight of historical experiences and historically-rooted strategic preferences' that constrains the development of responses to changes in the strategic environment. These

factors can affect strategic choices in varied and unique ways.[26] Strategic culture 'deals with how a nation views the place and role of military force in statecraft'.[27] Australia's strategic culture is defined by expeditionary projection of force in time of need. Despite disputes about paucity of resources for Australian defence, as well as disagreements regarding the degree of force projection suitable for Australia, 'the Australian people and their governments have been—and will continue to be—at one about the need to project military force decisively and effectively whenever and wherever it is required'.[28]

Australian strategic culture has been generally consistent since Federation, evolving in step with the national character. Reflecting Australian political culture, Australian strategic culture is rooted in Western liberal values and mores, including ideas about the use of force by democratic societies. Evans has identified four defining features of Australia strategic culture; the tendency to 'fuse statecraft with strategy in order to defend values in times of war or prolonged security crisis', the nation's liminal geopolitical status, the application of continental philosophy to an island nation, and the persistent 'irrelevance of Australian strategic theory to military practice'.[29] However, theory aside, 'the practice of statecraft [has] showed considerable continuity'.[30] Evans adds one further feature, pertinent until mid-1960s, being the paradox of Asian geography and European history'.[31]

Others have suggested a final feature, the drive for 'defence on the cheap'. Jeffrey Grey has noted Treasury's persistent primacy in policy development, and the enduring 'unwillingness of governments to think seriously about national interests in strategic as well as economic terms'.[32] For example, following the Second World War, the Defence Committee was instructed to determine a force structure and readiness based on budget rather than threat.[33] This approach has endured, and remains a planning constraint for the ADF to take into account.[34] From these—and the experience of British forces in the Falkland Islands (stripping museum displays for equipment prior to deployment)—the ADF must take key lessons on what is a sustainable peace dividend and what is an unacceptable capability risk.

Australia's strategic culture is a psycho-social construct based on historical experience, national values and public opinion.[35] It has throughout the last century exercised a normative influence that sustained Australia's expeditionary engagements even through several decades of espoused continental and 'Defence of Australia' strategies. Present informal custodians are likely to include the Chief of the Defence Force, Service Chiefs and senior staff, Secretary for Defence, and equivalent non-Defence stakeholders in the national security community.

Looking ahead, there may also be utility in the ADF electing to recognise this non-tangible asset. Strategic culture evolves slowly, if at all, and the markedly unsuccessful attempts to 'redesign Australian strategic culture around the narrow features of an immutable geography during the last quarter of the 20th century'[36] demonstrate the robustness of the construct, so it is not vulnerable to significant shaping. However, it has served ADF purposes well in the past and may offer utility in the future if actively fostered. There may, for example, be scope for the development of a cross-Service and cross-agency network of stakeholders who acknowledge strategic culture as 'an important ideational source of national pre-dispositions, and thus of national security'.[37]

Strategic dislocation

If strategy is indeed 'the art of the dialectic of two opposing wills using force to resolve their dispute',[38] then in the Australian context the two opposing wills have occasionally been policy and practice. As a consequence of the friction between policy and tasking, the ADF has repeatedly been placed in positions wherein the understood rules and principles of grammar are expected to provide a substitute for an explicit logic. This can work—indeed, military commanders have arguably done so 'whenever they found the twists and turns of logic too difficult to follow'.[39]

This is particularly critical in instances where policies have changed with the electoral cycle in a manner inconsistent with a procurement cycle. Critically, however, such a substitution will work only so long as 'the grammarian and the logician are heading in the same direction'.[40] In particular, the post-Cold War ADF provides examples of this failing to occur and the consequences thereof.

Australia effectively pursued a policy of forward defence for most of the last 100 years. Notably, from the end of the Second World War, it was based initially on Imperial imperatives and then the Australia, New

Zealand and US Security Treaty from 1952. This lasted until the withdrawal from Vietnam, when a continental approach was adopted, to be succeeded by various iterations of a policy of 'Defence of Australia', which focused on the defence of mainland Australia.[41] The self-reliance concept has remained central to Australian defence policy ever since.[42]

In 1987, a Defence White Paper was released which provided the basis for renewed military engagement in the decade following the close of the Cold War—and which renewed old tensions between defence policy and practice. [43] Titled *The Defence of Australia 1987*, the explicit strategy was of 'defence-in-depth of territorial sovereignty', emphasising a doctrine of homeland protection. At the same time, it established a paradox by demonstrating the intent and capability to project force well beyond the maritime approaches through operations such as MORRIS DANCE (non-combatant evacuation operation, Fiji) and LAGOON (peacekeeping, Bougainville), and later regional and UN deployments to Namibia, Iraq, Cambodia, Somalia, Rwanda and Bougainville, before commencing operations in Timor Leste.

The idea of what self-reliance means in terms of capability has evolved in the decades since, increasing emphasis on regional engagement and alliance relationships. However, the 2013 White Paper maintained the populist narrative, tasking Defence with deterrence and defeat of armed attacks on Australia, 'without having to rely on the combat or combat support forces of another country'.[44] This policy requirement requires the maintenance of 'credible high-end capabilities' to enable decisive action when required, in order to 'deter would-be adversaries and strengthen our regional influence'.[45]

This self-reliance rhetoric effectively dislocated the foreign policy and defence actions from the expressed defence policy and domestic political narrative. This was particularly pronounced in the ten years following the end of the Cold War. To the population, there was a strong message of continental defence. This drove decisions on investment in defence capabilities and facilities, and resulted in a markedly decreased overall ADF strength and capabilities for ground and maritime power projection as the forces were 'resourced, equipped and trained primarily for the direct continental defence of Australian territory'.[46]

However, external pressures shaped decisions to deploy ADF elements on a number of expeditionary tasks.[47] This meant that the forces could be called on to complete tasks for which they were not manned, equipped or trained. The effect of divorcing military posture from foreign policy creates 'a contradiction between available military means and the requirements for armed force that might be dictated by diplomatic obligations'.[48] Although by this time a role for the military in regional engagement activities had been identified, the Army in particular was not equipped or, initially, trained to undertake them.

The friction between capability and expectation was significant. Operations LAGOON and BEL ISI (Bougainville) provide clear examples of the deficiencies in force projection capability, based on policy decisions, impacting operational effectiveness.[49] There were a number of issues complicating force projection during these operations, including force of habit (more than a century of dependence on others for the exercise of force projection forestalled the design, development and rehearsal of critical enabling concepts), a bias towards good news reporting (dislocating senior leadership from practical issues and precluding passage of observations), and command and control issues (arising from poor strategic guidance, inadequate joint procedures and inter-Service rivalry).[50]

Intelligence, logistics, communications and other support systems were also inadequate. All these issues derive from the identified rift between policy and military strategy—between the logic and grammar of this conflict. And all contributed to an unacceptable outcome—increased risk for those at the tactical level.[51] Similar experiences were observed by the British in relation to the Suez incident in 1956.

Legitimate military forces accept that 'in the final analysis executing government policy—within a continuum of diplomatic, informational, military and economic influence—is what armed forces are for'.[52] *In extremis*, should a state's military force ever 'cease to be an instrument of broader, national statecraft', they immediately lose their legitimacy. Such an organisation may be as dangerous to its own people as to anyone else. Such groups tend to have a grasp of the grammar of war but very rarely its logic (which can be supplied no other way but by policy).

Where the ADF has acted in ways other than in strict accord with stated policy, it has in each instance been acting lawfully, on the order of the government, and in accord with the national strategic culture.[53] It

is highly worth noting, however, that 'even an exquisite grammar cannot save a dubious logic';[54] no matter how adaptable, how capable the men and women of the ADF, when defence policy is illogical to a situation or incompatible with the available equipment and manpower, it simply cannot be made to work. Henry Kissinger stated that 'the separation of strategy and policy can only be achieved to the detriment of both. It causes military power to become identified with the most absolute application of power and it tempts diplomacy into an over-concern with finesse'.[55]

The dislocation of policy from practice in Australian defence contexts appears to be more pronounced in post-war periods. During such times as the aftermath of the Second World War and the end of the Cold War, politicians and polity alike were very focused on achieving a substantial peace dividend by minimising defence posture and discouraging spending on major capability platforms or infrastructure. Gray's aphorism that 'there is more to war than warfare'[56] is quite apt—wars are waged for the eventual victory.

Yet on achieving said victory, at the end of the Second World War and the Cold War, the Australian military was all but torn apart. In each instance, it was an economic, rather than strategic rationale. This neither precluded the accomplishment nor rendered such activity improper; what it does inevitably do is place greater strains and risks on the involved parties, particularly regarding equipment and preparation. However, even in the light of a confusing policy narrative, there is a marked consistency between the way of war and the strategic culture's guiding frame. This may be seen in ADF actions in Rwanda, for example, where national values effectively guided military activity in the light of complex and confusing military policy.

Going forward, the ADF's senior leadership must recall these lessons and these issues, and proactively engage both in the formulation of strategy and in the conduct of proactive expectation management among external stakeholders. And, in the worst case scenario, the ADF's most senior leaders must be prepared to assume the responsibility for engaging with the policy makers to contest such an action.

Australia's future operating environment

The context in which the ADF will operate during the next 15 years will pose many challenges. It is important that Defence leaders understand the key trends shaping the future operating environment, and their likely influence, in order to design and resource response options.[57] However, significant caution must be exercised when attempting trend analysis. Trends being multi-faceted and interactive, it is often their second- and third-order effects that impact the future.[58] It is particularly important to recognise which aspects are crucial 'rather than ephemeral or superficial'[59]—and to avoid misreading 'recent and contemporary trends in warfare as signals of some momentous, radical shift'[60]—but rather to look to the effects on the character of contemporary warfare by political, social and strategic contexts than for changes to military science.[61]

It is not the intent of this article to predict the precise nature of the future battlespace. However, a number of meta-trends will affect the character of warfare in this space and must be borne in mind when considering not just the grammar but also the logic of engagements. Critically, the operating environment will be increasingly crowded,[62] it will be more intensely connected,[63] more lethal,[64] more collective,[65] and more constrained.[66]

Extrapolation of considerations from the meta-trends is important for discussion of the nature of future warfare.[67] From these trends, certain conclusions may be drawn as to their consequence on ADF operations. It appears that success will increasingly require integrated joint and coalition approaches, which draw on all elements of national power as well as regional or alliance capabilities as required. The ability to generate decision superiority will be critical. And the ability to apply 'power overmatch' at decisive points, whether special or temporal, will be crucial.[68] Caution must be exercised to ensure that the ADF does not commit to a force structure or posture designed to defeat an excessively-narrow conception of the future threat but rather maintains organisational flexibility to accommodate unexpected occurrences. [69]

Australian defence policy has long been framed in geographic terms. Some elements are immediately apparent, such as physical location and island construct; these largely shape announced policy. Some are less so, such as the enduring 'paradox of geographical proximity to but cultural distance from Asia and of

geographical distance from but cultural intimacy with the Anglo-Saxon heartlands, [which] has been at the centre of Australia's modern security dilemma'.[70]

Looking forward, the key area of interest to Australia will be the Indo-Pacific.[71] This is in fact an older construct that goes back to the early 1960s, despite recent policy saturation of East Asian rhetoric.[72] The reinstitution of this concept serves as a lesson on how flawed 'serious-sounding prognostications about strategic futures' can be, and teaches us not to rely too heavily on such extrapolations in strategic planning.[73] It is important for the ADF to appreciate this evolution, even though it may be a return to the past; this provides the focal context for all policy planning.[74] Within this frame, the US, India and China, and regional actors, will play particular roles.

It is important to note that geography does not matter in absolute terms to Australian strategy but rather in relative terms. Australia's geography matters in terms of relative technology, population dynamics, economic capacity and national strategic intent. Perhaps the biggest role that geography continues to play is in its shaping of Australian strategic culture and the legacy of a 'consistent "forward school" pattern in Australian statecraft'.[75]

Of course, the ADF may be required to generate effects anywhere in the world. While a highly-developed appreciation of the proposed operating environment is important for planning, the Korean, Vietnamese, Falklands and Afghanistan wars teach us the inevitable fallacies of such predictions and highlight the importance of detecting changing patterns of economic, political and military influence. The 2013 White Paper contended that trends and developments identified in the 2009 Paper had 'begun to coalesce and give shape to an increasingly complex global order'.[76] A wide number of factors will influence the formulation of defence policy, including the Indo-Pacific, socio-economic development and the effects of the global financial crisis, the power and intent of China and the US, regional military modernisation, and specific regional concerns.[77]

Towards strategic harmony

Because strategy strives to bridge the gap between political goals and military means, those ADF members engaged in its development must have a working understanding not just of their military domain but also of Australian political culture.[78] A country's military and political culture and the associated institutions have been termed 'mutually dependent variables' by Evans, who also suggests that the character of a legitimate military organisation is inextricably linked to dominant political views about the use of force.[79]

Since, as Clausewitz instructs, politics provides the framework for strategy and strategic practice, any strategy which fails to 'take note of political history, social values and ideology is unlikely to succeed'.[80] The British experience in the Second Gulf War, where smaller-power status denied them the influence in planning objectives and hence significantly complicated the end-state, serves as a lesson for proactive involvement; with our allies, our politicians, and all our stakeholders.

It therefore behoves all those of the leadership to build their knowledge and understanding of political culture in Australia, and to develop the skills knowledge and attributes required for a positive engagement with the Australian political culture. Australia's political culture is strongly aligned to Western values,[81] based on our colonial past and influenced heavily by utilitarianism, a social and conservative form of nationalism, the promotion of social cohesion, egalitarianism, and a marked degree of conformism and collectivism. Political debate 'has been firmly centred on economics and the administration of prosperity for as many citizens as possible'.[82] The ADF must find or create ways to increase its stake in these decision-making cycles, and build the relationships to enable success—the development of sound strategy that links our way of war with national policy.

Conclusion

As the ADF reviews its planning for its structuring and posturing for the next 15 years, it must acknowledge the friction between capability and expected task performance, and engage with other stakeholders to minimise its consequence in practice. It must recognise those broader political considerations that will continue to shape defence policy, and engage in the debates surrounding defence

strategy. The friction between ADF policy and practice is an ongoing issue that has significant capacity to detract from both narrow ADF and broader national interest objectives. As stated at the outset, the ADF must strive to force durable links between its way of war and the policy through the development of strong strategy. Doing so will ensure sympathetic development of tasking responsibility with capability and capacity.

It must also be prepared to adopt non-traditional capability multipliers, including developing culture-based approaches. This can be achieved by fostering in the profession of arms a stronger factual understanding of our martial history and the realisation of a military culture in which the positive engagement in through-career development and learning is truly valued—an internal balancing between intellectual and 'muddy boots' style officers. Encouraging work has commenced in this area but it must be persistently developed and guarded from the ravages of the coming peace dividend. Through this means, the ADF must produce diverse and capable leaders across the ranks capable of engaging in the strategic debate in order to work proactively towards harmonisation of the policy-practice dissonance.

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Notes

[1]   This is an edited version of a paper, titled 'The Australian, US, and British armed forces were among those that struggled to identify their missions in the aftermath of the Second World War and the end of the Cold War. Employing lessons from these periods, create a way ahead for the ADF as it prepares for the next fifteen years', submitted by the author while attending the Australian Command and Staff College in 2014.

[2]   Michael Evans, *The Tyranny of Dissonance: Australia's strategic culture and way of war, 1901-2005*, Land Warfare Studies Centre: Canberra, 2005, p. 106.

[3]   Considerations adapted from covering letter, Paul Dibb, *Review of Australia's Defence Capabilities: Report to the Minister for Defence by Mr Paul Dibb*, Australian Government Publishing Service: Canberra, 1986, pp. v-vii.

[4]   John Baylis and James Wirtz, 'Introduction' in John Baylis, James Wirtz, Colin S. Gray and Eliot Cohen (eds.), *Strategy in the Contemporary World,* Second Edition, Oxford University Press: Oxford, 2007, p. 4.

[5]   Hugh White, 'Studying Strategy Today', in Robert Ayson and Desmond Ball (eds.), *Strategy and Security in the Asia Pacific*, Allen & Unwin: Sydney, 2006, p. 3.

[6]   White, 'Studying Strategy Today', pp. 3-9.

[7]   Carl von Clausewitz, *On War*, trans. Michael Howard and Peter Paret, Princeton University Press: Princeton, 1989, p. 605.

[8]   See Colin S. Gray, 'Inescapable Geography', *The Journal of Strategic Studies*, Issue 22, Nos. 2-3, 1999, pp. 161-77; Antulio J. Echevarria, II, 'War's Second Grammar', Strategic Studies Institute Op-Ed, October 2009, available at <http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB946.pdf> accessed 13 May 2015;

Antulio J. Echevarria, II, 'War, Politics, and RMA: the legacy of Clausewitz', *Joint Force Quarterly*, Winter 1995-96, pp. 76-80.

9   Echevarria, 'War, Politics, and RMA', p. 78.

10 See Gray, 'Inescapable Geography'; David Kilcullen, 'Australian Statecraft: the challenge of aligning policy with strategic culture', *Security Challenges*, Issue 3, No. 4, 2007, pp. 45-65; Echevarria, 'War, Politics, and RMA', pp. 76-80.

11 Clausewitz, *On War*, p. 605

12 Evans, *The Tyranny of Dissonance*, p. v.

13 Other considerations include 'policy, strategy, operations, tactics or all of these … [or] mainly to strategic theory or to operational practice': Evans, *The Tyranny of Dissonance*, p. 7.

14 Evans, *The Tyranny of Dissonance*, p. 4.

15 Evans, *The Tyranny of Dissonance*, p. 11.

16 Evans, *The Tyranny of Dissonance*, pp. 51-4.

17 Antulio J. Echevarria II, *Toward an American Way of* War, Strategic Studies Institute, US Army War College: Carlisle: March 2004, p. 1.

18 Such as the subjugation of all Australian servicemen and -women to the laws of war, or the commitment made by a soldier to his fellow. See John Albert Lynn, *Battle: a history of combat and culture, from ancient Greece to modern America*, Basic Books: New York, 2003, p. 366.

19 Jeffrey S. Lantis, 'Strategic Culture and National Security Policy', *International Studies Review*, Issue 4, No. 3, 2002, p. 93.

20 One school of thought sees culture has a 'dynamic vessel that holds and revitalise the collective memories of people by giving emotional life to traditions'; strategic culture as a perpetuation of values and preferences. Others are more functional, for example, those who see strategic culture as 'the beliefs and assumptions that frame choices about international military behaviour, particularly those concerning decisions to go to war, preferences for offensive, expansionist or defensive modes of warfare, and levels of wartime casualties that would be acceptable'; a recognition of preferences with built-in rules to govern conduct in war. Post-modern, constructivist, metacultural, and other arguments further complicate the issue: see Lantis, 'Strategic Culture', p. 104.

21 Alastair Iain Johnston, 'Thinking about Strategic Culture', *International Security*, Issue 19, No. 4, 1995, p. 34.

22 Lantis, 'Strategic Culture', p. 88.

23 Kilcullen, 'Australian Statecraft', p. 46.

24 Kilcullen, 'Australian Statecraft', p. 46.

25 Evans, *Tyranny of Dissonance*, p. 3.

26 Johnston, 'Thinking about Strategic Culture', p. 34.

27 Evans, *The Tyranny of Dissonance*, p. 10.

28 Bob Breen, *Struggling for Self Reliance: four case studies of Australian regional force projection in the late 1980s and the 1990s*, ANU E Press: Canberra, 2008, p. 3.

29 Evans, *The Tyranny of Dissonance*, p. 23.

30 Kilcullen, 'Australian Statecraft', p. 55.

31 Evans, *Strategic Dissonance*, p. 25.

32 Quoted in Evans, *The Tyranny of Dissonance,* p. 24.

33 In June 1945, the Treasury forecast an annual defence budget of £60 million before any decisions about the size or needs of the pos-war forces were made. A year later, after the Defence Committee completed analysis and made their recommendations, the Prime Minister indicated that even less would be allocated, and directed 'that the chiefs should resubmit their plans on this basis': see Jeffrey Grey, *A Military History of Australia,* Third Edition, Cambridge University Press: Melbourne, 2008, p. 199.

34 For example, during the post-Cold War period, even Army capabilities in use overseas were stripped because they 'could not be justified for garrison operations'; Evans, *The Tyranny of Dissonance*, p. 55.

35 Lantis, 'Strategic Culture', p. 97.

36   Evans, *The Tyranny of Dissonance*, p. 4.

37   Lantis, 'Strategic Culture', p. 106.

38   Baylis and Wirtz, 'Introduction', p. 5.

39   Echevarria, 'War's Second Grammar', pp. 1-2.

40   Echevarria, 'War's Second Grammar', p. 1.

41   Department of Defence, *The Defence of Australia 1987*: *Defence White Paper 1987*, Australian Government: Canberra, 1987.

42   Dan Fortune, 'Self Reliance: an outdated and unaffordable concept for the ADF', *Australian Defence Force Journal*, Issue 193, 2014, p. 5.

43   Department of Defence, *The Defence of Australia 1987.*

44   Department of Defence, *Defending Australia and its National Interests: Defence White Paper 2013*, Australian Government: Canberra, 2013, pp. 24-8.

45   Department of Defence, *Defence White Paper 2013*, p. 24.

46   Kilcullen, 'Australian Statecraft', p. 57.

47   Including deployments to the Arabian Gulf, Cambodia, Somalia, Rwanda, Bougainville and East Timor.

48   Evans, *Tyranny of Dissonance*, p. 85.

49   Bob Breen, *Giving Peace a Chance: Operation Lagoon, Bougainville, 1994: a case of military action and diplomacy*, Strategic and Defence Studies Centre, ANU: Canberra, 2001.

50   Breen, *Struggling for Self Reliance*, p. 158.

51   Breen, *Giving Peace a Chance.*

52   Kilcullen, 'Australian Statecraft', p. 61.

53   Kilcullen, 'Australian Statecraft', p. 61,

54   Echevarria, 'War's Second Grammar', p. 1.

55   Quoted in Baylis and Wirtz, 'Introduction', p. 5.

56   Colin S. Gray, 'How Has War Changed since the End of the Cold War?', *Parameters*, Issue 35, No. 1, 2005, p. 7.

57   Australian Army, *The Future Land Warfare Report 2013,* Australian Army: Canberra, 2013, p. 2. Analysis of these trends also allows the ADF to design and resource initiatives, including areas of personal development, material enhancement, and joint and interagency connectivity that provide the broadest range of options for government.

58   Gray, 'How Has War Changed since the End of the Cold War?', p. 3.

59   Robert Ayson and Desmond Ball, 'Preface,' in Ayson and Ball, *Strategy and Security in the Asia Pacific*, p. xxi.

60   Gray, 'How Has War Changed', p. 2.

61   Gray, 'How Has War Changed', p. 3.

62   Crowded land, sea, air, space, and cyber-space; population density will continue to rise and urban concentrations increase; these will require ever larger numbers of ground troops, training and technologies to deny the detection threshold: see Australian Army, *Future Land Warfare*, pp. 4-5. The Army is not structured to deal with such complexity, in an echo of the restrictions on Army during the Defence of Australia period.

63   Land, sea, air, space and cyberspace domains will be increasingly connected.

64   Combatants will continue to pursue more lethal solutions, and non-state actors will increasingly have the commensurate access; also autonomous, remote devices are likely to result in capability overmatches. Within ten years this may open up options for augmentation of soldier's robustness and resilience. Consideration must also be given to 'the degree to which soldiers can be ethically enhanced': see Australian Army, *Future Land Warfare*, pp. 8-9.

65   The operational environment will be vastly more collective, with involvement from other government agencies, and with regional or broader focus. More exposure to joint training and environments will be essential, as will enhancements of the synthetic training environment.

66   Constrained finances will likely impact the ADF's ability to maintain all capabilities, possibly at the cost of corporate skills; other constraints may see increased international legal restraints, and lowered acceptance of collateral damage: see Australian Army, *Future Land Warfare*, pp. 11-2.

67   Australian Army, *Future Land Warfare*, p. 3.

68   Australian Army, *Future Land Warfare*, p. 5.

69   In 1956, Egyptian President Abdul Nasser nationalised the Suez Canal. Three months later, the UK and France launched an assault to re-secure it but were found to be under-equipped, under-trained and inadequate to the task.

70   Evans, *The Tyranny of Dissonance*, p. 25.

71   The resurgence of the Indo-Pacific strategic construct was confirmed by its displacement in the 2013 Defence White Paper of the Asia-Pacific terminology of the 2009 Defence White Paper, and certainly eclipsed the earlier 'South East Asia and South Pacific' focus. Strategists have framed Australia's geopolitical environment in different ways, including the Pacific, the Asia-Pacific, and the Indo-Pacific. The Indo-Pacific frame, conceiving the Western Pacific and the Indian Ocean as a single strategic system which encompasses Southeast Asia, is arguably the most relevant looking forward" Rory Medcalf, *Pivoting the Map: Australia's Indo-Pacific system*, Strategic and Defence Studies Centre, ANU: Canberra, 2012.

72   When it was cast in terms of an expected ongoing British influence in the Indian Ocean, and a projected Chinese threat.

73   Medcalf, *Pivoting the Map*, p. 2.

74   Most critically, the 'most immediate is our distinct two-ocean geography and the extension of our interests this entails if we are serious about engaging our full region in this so-called Asian Century': Medcalf, *Pivoting the Map*, p. 2.

75   Kilcullen, 'Australian Statescraft', p. 59.

76   Department of Defence, *Defending Australia and its National Interests.*

77   Department of Defence, *Defending Australia and its National Interests*, pp. 7-16.

78   Ayson and Ball, 'Preface', p. xxi.

79   Evans, *Tyranny of Dissonance*, p. 8.

80   Evans, *Tyranny of Dissonance*, p. 8.

81   Samuel P. Huntington, *The Clash of Civilizations and the Remaking of World Order*, Simon & Schuster: London, 2002, p. 151.

82   Evans, *Tyranny of Dissonance*, pp. 12-22.

The Rise of China: 'no worries' in the Southwest Pacific[1]

Captain David Proctor, Royal New Zealand Navy

Introduction

The November/December 1993 issue of *Foreign Affairs* featured an article by Nicholas Kristof titled 'The Rise of China'.[2] While perhaps not the first time the phrase was used, since that time 'The Rise of China'—alternatively and often referred to as 'China's rise'—has been the subject of significant scholarly discourse.[3]

Although the commentary has not always been pessimistic, a number of commentators, mainly from Western liberal democracies, have tended to report on the issue in terms of representing a threat to the *status quo* and therefore a threat to security.[4] This threat commentary has included opinion on the likely negative security implications for the Southwest Pacific resulting from China's increased interest in the developing island countries of the region.[5]

This article addresses whether China's interest in the Southwest Pacific represents a threat to regional security over the next ten years. The analysis utilises the traditional core elements of national power, namely diplomatic, military and economic, as a guide for discussion.[6] It begins with a brief outline of the Southwest Pacific's colonial history, including any notable historical Chinese influence. It then considers the regional impact of China-Taiwan rivalry, before analysing the effect on security of China's aid and economic activity in the region. The final section examines the impact of any military considerations.

The article concludes that although China's increasing interest in the Southwest Pacific represents a change to the *status quo*, the 'rise of China' is unlikely to present a threat to regional security in the period to 2025.[7]

Colonial history

When undertaking an analysis of any subject, it is useful to have an appreciation of the key factors influencing the matters at hand. For an analysis of a strategic nature, an appreciation of the abiding factors of history, geography and culture would be a recognised starting point.[8]

Prior to European exploration of the Pacific in the 16th and 17th centuries, the people of the Southwest Pacific had a relatively simple, non-industrial existence. After a period of colonial and imperial competition and conflict from the late 19th century up until World War 2, the Southwest Pacific was predominantly governed as a loose collection of colonies and territories of Western democratic nations through to the period 1960-80, when a number of countries transitioned through decolonisation to independence.[9]

Australia and New Zealand, both British colonies themselves, are broadly identified as 'occupying a special place' for the region and its people, primarily based on geographical proximity and shared historical linkages.[10] Similarly, the US has a mandated place in the region deriving from its role in World War 2 and its special relationship with the Micronesian states and American Samoa.[11]

These strong historical and geopolitical linkages are highly influential on the people and culture of the region in terms of those states that have been viewed as 'traditional' partners in the past. This traditional connection has generally supported a positive disposition toward Western democratic thinking and ideals.[12]

China in the Southwest Pacific

The arrival of Chinese contract labourers in the late 19th and early 20th centuries represents the first material influence of China in the region's modern recorded history (although there is evidence of distant ancestral Chinese connections with the people of the Southwest Pacific, and very minor trade in the 18th and 19th centuries).[13] Notwithstanding these early migrations, which led to the development of identifiable Chinese communities in some of the islands, China had very limited official contact or interest in the region prior to the 1970s.[14]

China's official interest in the Southwest Pacific was piqued by increased Soviet and Taiwanese diplomatic interest in the region in the early 1970s. While the Soviet dimension was relatively short-lived (and Sino-Taiwanese rivalry is discussed later in this article), the 1980s saw the start of a period of continuing Chinese migration by commercial traders who, while of Chinese ancestry, had no strong allegiance with either China or Taiwan.

Since the turn of the millennium, this particular phase of Chinese interest in the Southwest Pacific has attracted increased strategic commentary, primarily because it has coincided more broadly with the perception of China's rise in the broader Indo-Pacific region.[15] While the published discourse covers many areas, there are three broad themes that can be identified—competition between China and Taiwan, economic development and resources access, and strategic influence.

China and Taiwan

In formal, diplomatic terms, eight of the 14 Southwest Pacific island states recognise China, while the remainder recognise Taiwan.[16] Although most of the Southwest Pacific states are small both in geography and economic influence, their diplomatic recognition of either China or Taiwan has traditionally been important in the sense of global politics. This issue, and China's very strong 'one China' stance—which requires other states to make a choice between the two—is the reason there has been significant rivalry between China and Taiwan since the Southwest Pacific island states first started achieving independence.

A number of the Southwest Pacific states have switched their formal diplomatic allegiance between the two, notably in the period from the late 1990s through to the mid 2000s.[17] This competition for recognition, somewhat derided by Western commentators as 'cheque-book diplomacy', has largely taken the form of offers of aid, often with diplomatic recognition as a clearly understood but unstated expectation.[18] Its critics argue that the rivalry—because it is frequently linked to economic aid—is destabilising to the island states and contributes to corruption in the region.[19]

However, since the Kuomintang party returned to power in Taiwan in 2008, there has been a period of relative truce between China and Taiwan regarding 'cheque-book diplomacy' and formal recognition.[20] Furthermore, there seems to have been a normalisation of economic interactions in recent times, with increased trade and commerce between the Southwest Pacific states and both China and Taiwan, regardless of the status of diplomatic recognition.[21] Some have suggested this has arisen because Taiwan has come to the realisation that it cannot continue competing with the 'deeper pockets and rising political influence' of China's 'cheque-book'.[22] Another view, not exclusive of the former, is that because of China's increasing global influence, it sees less need to compete financially with Taiwan to secure diplomatic recognition.[23]

The majority of the negative commentary regarding corruption relates to the perceived lack of transparency in the form and nature of the aid provided by China and Taiwan. A specific criticism is that the aid typically has few conditions, if any, in the area of 'governance'.[24] However, some have argued that while the diplomatic rivalry between China and Taiwan has had an effect on domestic politics in some states, 'it is unfair to blame Taipei and Beijing for the culture of corruption in the region'.[25] Others have similarly contended that 'there is little concrete evidence' that China's aid activities have contributed to corruption and instability in the region.[26]

Given these assessments, it seems reasonable to conclude that the historical rivalry between China and Taiwan for influence in the Southwest Pacific has somewhat dissipated in recent years, and does not seem to represent any particular threat to regional security for the foreseeable future. Similarly, while

corruption remains an issue in a number of Southwest Pacific states, it cannot reasonably be concluded that its impact on regional security results from China-Taiwan rivalry or the form of aid being provided by both countries in the Southwest Pacific.

China's aid and economic assistance

There are a number of challenges in attempting to analyse China's aid and economic assistance to other countries, not least because China is not a member of the OECD's Development Assistance Committee, nor does it necessarily comply with the principles and guidelines of that committee.[27] Moreover, China has only recently started using the term 'aid' when discussing engagement with developing countries, having previously preferred the terms 'foreign assistance', 'economic cooperation' and 'development assistance'.[28]

Additionally, difficulties have existed with disentangling China's aid component from commercial loans, particularly when they are combined as part of wider development assistance packages.[29] However, notwithstanding the difficulties in determining a meaningful dollar value of China's direct financial aid and other forms of financial assistance in the region, the commentary is universal that China's quantum is large and increasing.

Following on from China's first *White Paper on Foreign Aid* in 2011, China's 2014 White Paper describes China's aid in three categories; grants, interest-free loans and concessional loans.[30] The White Paper identifies China as the largest 'developing' nation in the world, and confirms the concept of 'South-South cooperation' as aid being provided by a developing nation to another of developing status. The document also espouses China's foreign aid as following a number of policy principles, namely:

> When providing foreign assistance, China adheres to the principles of not imposing any political conditions, not interfering in the internal affairs of the recipient countries and fully respecting their right to independently choosing their own paths and models of development.[31]

As discussed earlier, an alleged unclear intent and lack of transparency by China in the provision of aid and financial assistance in the Southwest Pacific has been one reason for criticism, or suspicion of China's motives, by some Western commentators.[32] Looking deeper, the criticism suggests that the lack of transparency is part of a deliberate 'grand strategy', whereby China is seeking to directly usurp the historical Western influence in the Pacific.[33]

There are two themes identified in the criticism. First, that China, as a deliberate strategic ploy, is seeking to dominate the supply of the Southwest Pacific's raw materials for its own industrial needs.[34] Second, that China is seeking to displace traditional Western donors in the Southwest Pacific by deliberately making its aid more attractive. If true, both would likely represent a destabilising influence on the region.

In considering the first issue, it is evident that China's interest in the resources of the region was initially viewed by some with suspicion. However, with the passage of time, and with the benefit of hindsight and improving clarity of policy from China, most contemporary analysis has concluded that China's resource investments are 'more normally market-driven than state-driven'.[35]

An example of this is the large US$1.4 billion Ramu nickel mine development in Madang, Papua New Guinea, being undertaken by China Metallurgical Corporation.[36] Whether that company is operating as a state-owned organisation or as a commercial enterprise is difficult to gauge. However, the commercial nature of the activity is not dissimilar to the massive US$19 billion LNG project in Papua New Guinea being undertaken by the multinational ExxonMobil.[37]

In assessing the second issue, it is evident that China's 'un-conditional' approach to providing aid—apart from requiring adherence to the 'one China' policy—is *prima facie* at odds with the efforts of Australia and New Zealand to strengthen governance in the region.[38] Nevertheless, China's position of non-interference in domestic issues has been consistent, and is being applied across the globe, not just in the Southwest Pacific.[39] The publication by China of recent white papers on foreign aid has also provided improved clarity of China's policy intent, including more transparency regarding the value of aid and where it is being provided. Another encouraging point of note regarding China's aid is the emergence of cooperation and overlap with the efforts of other nations, including Australia and New Zealand.[40]

A further important factor is that notwithstanding China's massively-increased provision of aid and assistance into the region, the quantum remains at much lower levels than that provided by traditional donors.[41] In 2012-13, for example, Australia provided approximately US$0.5 billion in aid to the region, whereas China provided approximately US$0.18 billion (using official figures derived from its recent White Paper).[42] Similarly, according to analysis by Shahar Hameiri, 'the Pacific's two-way trade with Australia is still double the size of its trade with China'.[43] Accordingly, there seems to be no evidence of intent, hidden or otherwise, of China attempting to usurp the traditional donors.

Moreover, the evidence does not support those pushing a 'grand strategy' conspiracy theme by Beijing. Rather, the evidence would suggest that, irrespective of the definition of aid or transparency of intent, China's aid to the region is primarily targeted at generating business and economic development for the mutual benefit of Southwest Pacific states and China.[44] Additionally, it seems clear that China remains 'a long way from challenging Australian dominance in aid, trade, investment and defence links' in the region.[45]

Perhaps the nail in the coffin of the 'grand strategy' threat discourse is that the relative size of New Zealand's and Australia's trade and resource activity with China makes them substantially more important in economic terms to China than the states of the Southwest Pacific could ever be.[46] In summary, China's increased aid and economic interest in the Southwest Pacific are not considered to represent a threat to regional security. Indeed, it could be argued that the improved clarity China is providing in relation to its aid program, supported by its consistent actions, is gradually contributing to regional stability.

China's 'light' military touch

In recent decades, China has significantly expanded its military capabilities, facilitated by its steadily increasing economic prosperity. However, in examining the security impact of China's increased interest in the Southwest Pacific through a military lens, there appears to be universal agreement from commentators, including Chinese officials, that China does not have the capacity to rival the military pre-eminence of the US nor to project power into the Southwest Pacific in any practical fashion, beyond goodwill visits.[47]

Specifically, there is little or no evidence that China is considering any military expansion into the region or seeking to notably increase its military influence in the region.[48] While there have been military ship visits to a number of Southwest Pacific states, the ships have also visited New Zealand and Australian ports. Similarly, China has provided training and logistics-focused assistance to Fiji, Papua New Guinea and Tonga.[49] While these represent new initiatives in the region, military training and assistance from the traditional partners, other than with Fiji, remains a feature.[50] Moreover, in the case of Fiji, with the recent thawing of relations, it is reasonable to expect that military linkages will re-form along traditional lines.[51]

Conclusion

While there has been significant commentary over the past decade or so suggesting China's increased interest in the Southwest Pacific represents a threat to regional security, it is notable that the majority of recent commentary is less alarmist in nature, at least in relation to the foreseeable future. Most contemporary opinion suggests that not only does China currently lack the means to challenge the still markedly-predominant Western influence in the region, it is also not in China's national interests to do so, not least because China's priorities are closer to home in the South China Sea and other parts of Northeast and Southeast Asia.

The analysis in this article has examined China's increased interest in the Southwest Pacific from a range of diplomatic, economic and military perspectives. The outcome supports the 'no worries' conclusion that while China's increasing interest in the Southwest Pacific represents a change to the *status quo*, the rise of China is unlikely to present a threat to regional security in the next ten years.

Nevertheless, the uncertainty of international relations is acknowledged. And the words of Kristof, in his 1993 article on 'The Rise of China', are perhaps an appropriate way to close:

China is not a villain. It is not a renegade country like Iraq or Libya, but rather an ambitious nation that is becoming the behemoth in the neighborhood. One of the oldest problems in international relations, ever since the rise of Assyria and Sparta, has been how the international community can accommodate the ambitions of newly powerful states.[52]

Captain David Proctor joined the Royal New Zealand Navy (RNZN) in January 1987. His early postings included HMNZ Ships Wellington and Southland, prior to obtaining his Supply Officer Charge Certificate in HMNZS Canterbury. Following a series of short appointments in shore-based finance, logistic and administrative posts, he joined HMNZS Tui as Supply Officer, followed by HMNZS Endeavour immediately prior to her Battle of the Atlantic commemoration deployment.

Later postings included Flag Lieutenant to the Chief of Naval Staff, and commissioning Supply Officer on HMNZS Te Mana. Captain Proctor attended the Australian Command and Staff Course in 2002, which included attaining a Masters in Management (Defence Studies). On his return to New Zealand, he was appointed the RNZN Supply Chain Manager and Fleet Supply Officer. In December 2003, he was posted to the UN Mission in support of East Timor for seven months. In 2006, he assumed the role of Captain Fleet Support, before being posted as Directing Staff at the Australian Command and Staff Course in 2007.

In 2010, Captain Proctor was promoted to his current rank and posted to the new Defence Logistics Command. In June 2013, he was appointed Director Capability Portfolio Planning. He is currently attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College.

DISCLAIMER

The views expressed in this article are the views of the author, and do not necessarily reflect the views of the New Zealand Defence Force or the New Zealand Government.

Notes

[1]   This is an edited version of a paper, with the same title, submitted by the author while attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College in 2015.

[2]   Nicholas Kristof, 'The Rise of China', *Foreign Affairs,* November/December 1993, available at <http://www.foreignaffairs.com/articles/49405/nicholas-d-kristof/the-rise-of-china> accessed 24 February 2015.

[3]   Both China's rise and 'The Rise of China' will be used interchangeably in this article. Separately, it is observed that official Chinese commentary since the early 2000s has used the terms 'Peaceful Rise', evolving to 'Peaceful Development': see Chien-peng Chung, *China's Multilateral Cooperation in Asia and the Pacific: institutionalizing Beijing's 'good neighbour policy',* Routledge: New York, 2010, p. 18.

4 Jonathan Sullivan and Bettina Renz, 'Representing China in the South Pacific', *East Asia,* Vol. 29, No. 4, 2012, p. 377, available at <http://link.springer.com/article/10.1007/s12140-012-9177-0> accessed 9 February 2015; James Brown and Rory Medcalf, 'Fixing Australia's Incredible Defence Policy', Lowy Institute website, 8 October 2013, pp. 3-5, available at <http://www.lowyinstitute.org/publications/fixing-australias-incredible-defence-policy> accessed 20 February 2015.

5 For the purposes of this paper, the Southwest Pacific is defined as the member countries of the Pacific Islands Forum (excluding Australia and New Zealand), namely Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshal Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu. See the Pacific Islands Forum website, available at <http://www.forumsec.org/pages.cfm/about-us/> accessed 26 February 2015.

6 The Royal College of Defence Studies, *Thinking Strategically,* UK Ministry of Defence: London, 2012, p. 1.

7 Utilising definitions in The Royal College of Defence Studies' *Thinking Strategically,* pp. 20-1: 'Influence is the sum of actual power, potential and reputation. It describes and prescribes how much the world (and other actors and their actions) can be shaped in one's favour'; *Security* is described in a wide and straight forward conceptual context as the ability for states to have the 'freedom to live, act and make choices'. It includes considerations of 'ultimately, the defence of national sovereignty'.

8 The Royal College of Defence Studies, *Thinking Strategically,* Annex A

9 Jian Yang, *Pacific Islands in China's Grand Strategy: small states, big games*, Palgrave Macmillan: London, 2011, pp. 24-6.

10 Yang, *Pacific Islands in China's Grand Strategy*, pp. 89-91.

11 Steven Ratuva, 'A New Regional Cold War? American and Chinese Posturing in the Pacific', *Asia and the Pacific Policy Studies*, Vol. 1, No. 2, 2014, p. 410, available at <http://onlinelibrary.wiley.com/doi/10.1002/app5.38/pdf> accessed 1 March 2015.

12 Jian Yang, 'China in the South Pacific: hegemon on the horizon?', *The Pacific Review,* Vol. 22, No. 2, May 2009, p. 148, available at <http://dx.doi.org/10.1080/09512740902815292> accessed 9 February 2015.

13 Between 1865 and 1941, approximately 20,000 Chinese indentured labourers went to the Southwest Pacific: see Yang, *Pacific Islands in China's Grand Strategy*, p. 7.

14 Bill Willmott, 'The Overseas Chinese Experience in the Pacific', in Terence Wesley-Smith and Edgar A. Porter (eds.), *China in Oceania: reshaping the Pacific*, Vol. 1, Berghahn Books: New York, 2010, pp. 94-6.

15 Yang, 'China in the South Pacific', p. 140.

16 Yang, *Pacific Islands in China's Grand Strategy*, p. 52. The states which recognise China are Cooks Islands, Federated States of Micronesia, Fiji, Papua New Guinea, Niue, Samoa, Tonga, and Vanuatu; those which recognise Taiwan are Kiribati, Marshall Islands, Nauru, Palau, Solomon Islands, and Tuvalu.

17 Yongjin Zhang, 'A Regional Power by Default', in Wesley-Smith and Porter, *China in Oceania*, p. 51.

18 Terence Wesley-Smith, 'China's Pacific Engagement', in Wesley-Smith and Porter, *China in Oceania*, p. 33; Yang, *Pacific Islands in China's Grand Strategy*, p. 53.

19 Joel Atkinson, 'China-Taiwan diplomatic competition and the Pacific Islands', *The Pacific Review,* Vol. 23, No. 4, September 2010, p. 407, available at <http://dx.doi.org/10.1080/09512748.2010.495998> accessed 9 February 2015.

20 Yang, *Pacific Islands in China's Grand Strategy*, p. 51; Atkinson, 'China-Taiwan diplomatic competition and the Pacific Islands', p. 407.

21 Yang, *Pacific Islands in China's Grand Strategy*, p. 73.

22 Wesley-Smith, 'China's Pacific Engagement', p. 33.

23 Yang, *Pacific Islands in China's Grand Strategy*, p. 68.

24 Atkinson, 'China-Taiwan diplomatic competition and the Pacific Islands', pp. 419-21.

25   Yang, *Pacific Islands in China's Grand Strategy*, p. 67.

26 Jonathan Sullivan and Bettina Renz, 'Representing China in the South Pacific', *East Asia,* Vol. 29, No. 4, 2012, p. 382.

27   See Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee's (DAC) website, available at <http://www.oecd.org/dac/developmentassistancecommitteedac.htm> accessed 23 June 2015.

28   Philippa Brant, 'Chinese Aid in the South Pacific: linked to resources?', *Asian Studies Review*, Vol. 37, No. 2, 2013, p. 161, available at <http://dx.doi.org/10.1080/10357823.2013.767311> accessed 9 February 2015.

29   The China Development Bank often underwrites the non-aid finance part of the large assistance packages. See also Shahar Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', *The Pacific Review,* 2015, p. 9, available at <http://dx.doi.org/10.1080/09512748.2015.1012542> accessed 1 March 2015.

30   People's Republic of China, *China's Foreign Aid (2014)*, China's Information Office of the State Council website, July 2014, available at <http://news.xinhuanet.com/english/china/2014-07/10/c_133474011.htm> accessed 8 March 2015. 'Grants' are mainly used build small or medium-sized social welfare projects, and to fund human resources development cooperation, technical cooperation, material assistance and emergency humanitarian aid. 'Interest free loans' are targeted at helping recipient states construct public facilities. 'Concessional loans', provided by the Export-Import Bank of China, are mainly used to assist in the development of manufacturing projects, large infrastructure projects with economic and social benefits, and for the supply of complete plants, machinery and electronic products.

31   People's Republic of China, *China's Foreign Aid.*

32   Atkinson, 'China-Taiwan diplomatic competition and the Pacific Islands', pp. 411 and 419-21; Brant, 'Chinese Aid in the South Pacific', p. 165.

33   Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 2.

34   Wesley-Smith, 'China's Pacific Engagement', pp. 31-3.

35   Brant, 'Chinese Aid in the South Pacific', p. 159; Paul D'Arcy 'The Chinese Pacifics: a brief historical review', *The Journal of the Pacific,* Vol. 49, No. 4, 2014, p. 405, available at <http://dx.doi.org/10.1080/00223344.2014.986078> accessed 9 February 2015.

36   Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 13.

37   Hamish McDonald, 'Papua New Guinea's first LPG project: is PNG cooking with gas?', *The Age*, 4 February 2015, available at <http://www.theage.com.au/comment/papua-new-guineas-first-lpg-project-is-png-cooking-with-gas-20150203-134nj0.html> accessed 23 June 2015.

38   Australia's and New Zealand's interest in improving governance is supported by the OECD-DAC guidelines on the provision of aid.

39   Atkinson, 'China-Taiwan diplomatic competition and the Pacific Islands', p. 420.

40   Philippa Brant, 'China's Foreign Aid White Paper: quick overview', Lowy Institute website, 10 July 2014, available at <http://www.lowyinterpreter.org/post/2014/07/10/China-Foreign-Aid-White-Paper-overview.aspx> accessed 20 February 2015; Zhang Denghua, 'China's second White Paper on foreign aid: impressive growth in 2010-12', *Devpolicyblog,* available at <http://devpolicy.org/chinas-second-white-paper-on-foreign-aid-impressive-growth-in-2010-2012-20140812/> accessed 8 March 2015; Dennis Rounds, 'China hands out the goodies to Pacific allies', *Islands Business,* Vol. 40, No. 12, December 2014.

41   Sullivan and Renz, 'Representing China in the South Pacific', p. 381.

42   Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 4.

43   Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 12.

44   Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 10.

45   Jenny Hayward-Jones, 'China in the Pacific Islands: a reality check', *New Zealand International Review,* Vol. 38, No. 5, September/October 2013, p. 8.

46   Sullivan and Renz, 'Representing China in the South Pacific', p. 381.

47   Ratuva, 'A New Regional Cold War? American and Chinese Posturing in the Pacific', p. 417; also Michael Powles, 'Challenges, Opportunities, and the Case for Engagement', in Wesley-Smith and Porter, *China in Oceania,* p. 71; Yang, *Pacific Islands in China's Grand Strategy*, pp. 129-32; and Wesley-Smith, 'China's Pacific Engagement', p. 43.

48   Yang, 'China in the South Pacific, p. 144; Hameiri, 'China's "charm offensive" in the Pacific and Australia's regional order', p. 12.

49   This support has included barracks refurbishment, uniforms, vehicles and other non-lethal equipment. See also Hayward-Jones, 'China in the Pacific Islands', p. 10; Yang, *Pacific Islands in China's Grand Strategy*, p. 95.

50   Hayward-Jones, 'China in the Pacific Islands', p. 10.

51   Ratuva, 'A New Regional Cold War? American and Chinese Posturing in the Pacific', p. 413.

52   Kristof, 'The Rise of China'.

Learning from Mother Nature: 'biomimicry' for the next-generation armed forces [1]

**Major Charles Phua Chao Rong, Singapore Armed Forces, and
Military Expert 5 Calvin Seah Ser Thong, Singapore Armed Forces**

Introduction

Animals have been man's best companion in warfare since ancient days. It was the cavalry horse, scout dog and messenger pigeon—among others—that supported human warfare in past millenniums.[2] However, the advent of metallurgy in warfare displaced these now 'less reliable' animals with mechanical machines. Without metals, the materiel culture of society is unthinkable. Metallurgy is the basis for much of the production of manufacturing, transportation and communications equipment, as well as civil construction and contemporary military operations.

However, what metallurgy gained in certainty, it lost in the human/animal touch and the unexplained irrational factors that animals deliver to the battlefield. As exemplified in an old Chinese proverb, the warhorse was able to independently evade the enemy's pursuit and deliver its injured and even unconscious rider-owner back to base camp, something that could never be done by current-level 'mechanical machines'.

Moreover, the utility of animals in certain situations remains, especially when the operating terrain does not favour metallurgy. For example, during World War 2, American armoured units found that the mountainous terrain and temperate forests in Sicily did not favour the mass use of armour.[3] So some US forces used horses instead. In the Asian theatre, the unorthodox combat unit 'Merrill's Marauders' employed several hundred horses and mules in its fight against the Japanese in Burma.[4] More recently, in particularly mountainous terrain in Afghanistan, some US Army Special Forces were calling in precision-guided munitions against the Taliban from horse-back.[5]

Regardless of terrain, the lessons of nature and man's longstanding relationship with animals and other creatures, both domesticated and in the wild, have provided an inspiration for military technologists throughout military history—and this trend is likely to continue. One of its manifestations is 'Biomimicry', popularised around 1997 with the release of Janine Benyus' book, *Biomimicry: innovation inspired by nature*, which is explored further in this article.[6]

The dominance of metallurgy in modern warfare

In modern militaries, most equipment is metallic. Precision strikes (whether using small arms or large-calibre guns), precision manoeuvre (by land vehicles or aircraft and ships) and precision information networks all use equipment involving metals. Gone are the days where soldiers diligently practised martial arts to fight with spears or pikes, of which only the tip might be metal, depending on the warrior culture and historical period. Metallurgy has now become the dominant paradigm in modern weapons technology, albeit metallurgy appears to be devoid of a central essence and is often more of a means to an end.

Animal mimicry, on the other hand, has often inspired and influenced the design of modern war machines. For instance, with reference to Figure 1 (overleaf), the first generation tanks took inspiration from caterpillars (and the traction system of modern tanks is still often referred to as 'caterpillar' tracks).[7]
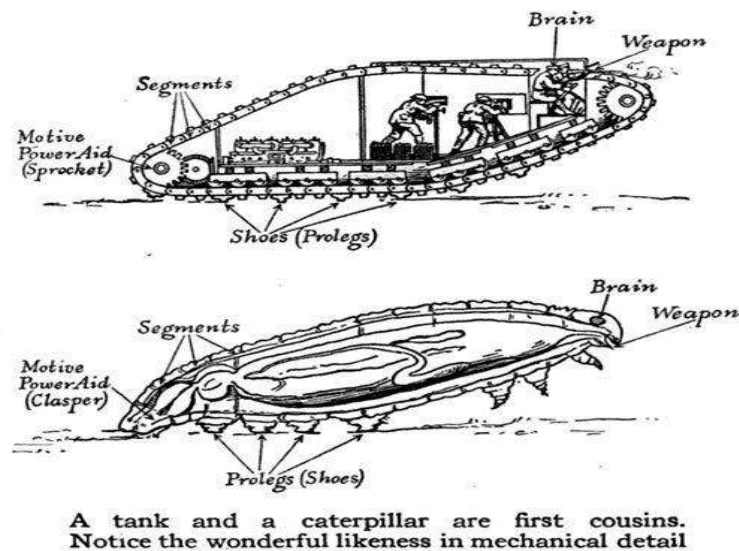
A tank and a caterpillar are first cousins.
Notice the wonderful likeness in mechanical detail

**Figure 1: Prototype drawing of the 'Caterpillar tank',
subsequently introduced in the First World War**[8]

Modern radar (range and detection) mimicks the sonar mechanism used by bats and dolphins.[9] The Wright brothers would not have invented the prototype aircraft in 1903 if they had not attempted to mimic birds in flight. Even Leonardo da Vinci's 'Ornithopter' and the Greek mythological character Daedalus, with wings fashioned of wax, feathers and twine, were a mimicry of birds.[10] In several of these examples, metallurgy provided the 'means' but animal mimicry was the source of inspiration for the 'end'.

Today, some commentators are arguing that metallurgy has lost its lustre and that it may now have reached the point, typical in the so-called 'S curve' of the technology life cycle, where it is increasingly providing diminishing returns.[11] From a capability perspective, the example is cited of titanium being the hardest of metals—yet the hardest substance on earth is synthetic diamonds, which cost about 15 per cent less than real diamonds.[12] So if it was not for the cost, we would be shooting diamonds!

Moreover, metal may be hard but it is less flexible and not stealthy in terms of electronic detection. Conceptually, from a paradigm perspective, metallurgy appears to work in binary terms—metallic platforms either shoot or get shot, they either destroy or are destroyed. There is no fuzzy middle, such as growing and self-healing after being hit, which is hardly representative of reality and nature. The golden question is what is next after metallurgy?

The potential of biomimicry

Imagine the following scenario in which you, as a lone soldier, are tasked to capture a terrorist in a building. While making your way to the building by night, your clothing changes patterns to meld with your surroundings, just like a chameleon. On reaching the building, you climb the outside wall like a gecko to the third floor where the terrorist is hiding. Once inside, you scan the room like a snake, sensing the image of your target in the darkness. You move towards him but he shoots first. Your abalone shell outer armour is penetrated but rapidly self-heals, while your spider silk inner armour stops the bullet. You are able to move near enough to stun your target like an electric eel. As you carry his inert body out, you avoid a number of booby traps and improvised explosive devices through your sense of smell.

This scenario may seem fanciful. But it could become a reality in the not too distant future. That is not to suggest the paradigm of metallurgy dominance is over. However, as a potential complement to metallurgy, it is useful to understand the philosophical underpinnings and specific areas where biomimicry appears likely to make a useful contribution to next-generation armed forces.

From a philosophical perspective, biomimicry can be said to represent a holistic solution because its envisaged bio-designs are not a collection of parts but a synthesis of a whole.[13] This accords with the 'system of systems' thinking of the 'Revolution of Military Affairs' of the 1990s and its advocacy of network centric warfare.[14]

Philosophically, animals by nature are a complete ecosystem (system of systems) and studying how they 'operate' will help find parallels that military technology and weaponry might emulate. From an evolutionary perspective, biomimicry could also provide the next 'revolution in military affairs', with the development of weapons systems paralleling the evolutionary changes in nature, where a constant iteration reflects the dictum of Charles Darwin that 'only the fittest survives'.

From this chain of logic, it seems reasonable to contend that by adopting biomimicry, future armed forces will be able to indirectly harness nature's evolutionary processes as part of their force development. That would be in stark contrast to metallurgy, where linearity and individualism appear to prevail.

A digress to contrast physics and biophysics is needed to illustrate this point. Physics describes brute strength. In linear terms, it theorises that a top-notch, 60 kilogram weightlifter can clean-and-jerk about 180 kilograms, typically three times their own body weight.[15] Contrast that to a leaf-clutter ant carrying 50 times its own weight, a male rhinoceros beetle 850 times and a tiny mite 1180 times its own weight.[16] The exoskeleton and biophysical make-up of these insects, which typically operate in hordes, have tremendous implications for military technology. However, biomimicry has far wider applications, as will be discussed in the following sections.

Individual survival and protection

Water

For soldiers, water is more critical than food. Humans die from dehydration within three to seven days but can survive without food for around 30-40 days. In battle, we must always foresee the scenario that an adversary will seek to cut off our lines of communications. Jungle survival skills teach us how to find water sources and drink from rivers using water purification tablets. However, what if there are no rivers and dynamic operations do not afford troops the opportunity to retrieve water by condensation or similar means.

Here, beetles in the Namibian desert appear to have evolved a solution. Although it lives in one of the driest deserts in the world, the Namib Desert Beetle is able to obtain all the water it needs from the ocean fog, using the unique surface of its back. During the day, its matt black shell radiates heat. But at night, it becomes slightly cooler than its surroundings, causing fog to condense on its shell. In the morning, the beetle simply tips itself up and lets the water trickle into its mouth.

As illustrated at Figure 3, researchers from the Seoul National University of Technology have designed the 'Dew Bank Bottle', based on the biodesign of the Namib Desert Beetle, which can harness water even in the most unlikely environments, potentially enabling soldiers to condense water on the move.[17]

Figure 3. Desert beetle and the Dew Bank Bottle (overleaf)

Metal(Stainless steel) with cold property gathers water in air. (The reason that much of dewdrops are gathered to surface of glass or metal at dawn is because the surface gets colder than air)

Uneven form creates more dewdrops by widening superficial area of air.

Narrow gap with the size to permit only water drops prevents the contamination by foreign material and the dispossession of waters by wildlife.

Camouflage

In Soldiering 101, camouflage is used to prevent enemy detection. The Singapore Armed Forces have evolved from first to second-generation camouflage, from using plants and synthetically pre-designed camouflage to digitally-pixelated camouflage whose design has been proven by the US Marine Corps to play tricks with the human eye. [18] However, wearing a green pixelated uniform while fighting in urban terrain does not intuitively translate to a sense of being 'protected' by pixelated technology, whereas a grey pixelated uniform would seem more useful.

However, it does not make logistical or operational sense to change from green to grey just before entering an urban terrain, especially given the dynamic nature of next-generation warfare, where soldiers are likely to have to fight in both urban and rural terrain interchangeably and in compressed tempo. Active or adaptive camouflage as inspired by chameleons and the octopus is useful here.

Chameleons and certain species of octopuses can alter their colour through the use of chromatophores that control the type and amount of light reflected. Work along these lines is being carried out at the Sandia National Laboratories in Albuquerque, New Mexico (with funding from the US Department of Energy), where scientists have started to create a synthetic, biomimetic material that will mimic an animal's ability to colour-shift.

Team leader George Bachand notes that 'military camouflage outfits that blend with a variety of environments without needing an outside power source—blue, say, when at sea, and then brown in a desert environment—is where this work could eventually lead'.[19]
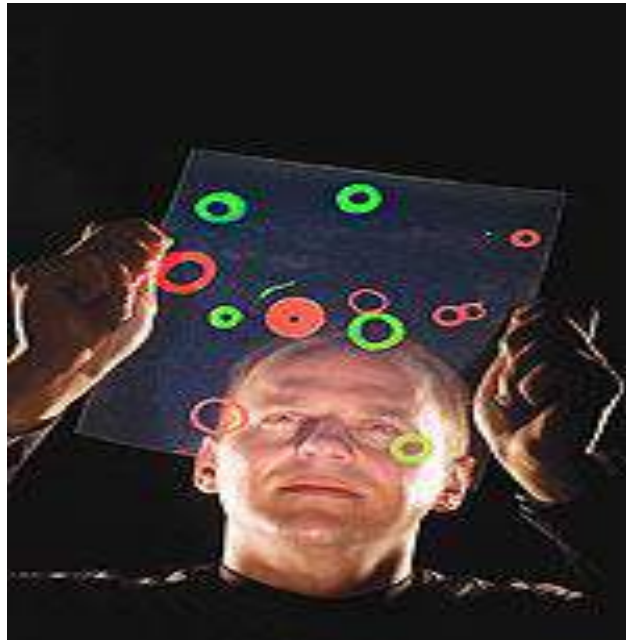
**Figure 4. Sandia researcher examining
an enlargement of light-emitting quantum dots**[20]

Armour protection

Currently, infantry soldiers wear heavy armour to protect against small arms fire. However, it comes at the expense of mobility. Spiders offer a solution to light weight yet durable body armour. Scientists at the University of California have identified the genes and DNA sequences for two key proteins used in the 'dragline' silk of the tiny but lethal spiders found in the region. This discovery could lead to a variety of new materials for industrial, medical and military uses. Dragline silk from black widow spiders is regarded as superior to that from other spiders because of its strength and extensibility, which enables the silk to absorb enormous amounts of energy.

The silk's properties have interested the US military, which is keen to explore the possibility of copying the structure of the silk for lightweight body armour.[21] This is not necessarily a new revelation, given that the Mongols issued silken body armour to every warrior, which was extremely light yet sufficiently resilient to protect them from enemy arrows. But it is certainly a new age rendition of a historical concept.

Beyond lightness, the unique materials in the exoskeleton of certain animals may also prove useful in augmenting human abilities. For instance, both the shells of the Mantis Shrimp and common garden snail have inspired the composite use of hard ceramic and elastic organic materials. For example, a partnership between Harvard University, the University of California and the Nanyang Technological University in Singapore has been established to study the makeup of the Mantis Shrimp's claw.[22]

Researchers have found that the claw comprises an outer layer of very hard crystalline calcium-phosphate ceramic material that is about 60 micrometres thick. While it is actually quite fragile and can shatter on relatively minor impact, the team also discovered a much thicker region beneath it, comprising layers of fibres made from an elastic material often found in sea fish exoskeletons. The team believes that the multiple layers of fibres help prevent the claw from fracturing. With this design in mind, body armour could be designed in a similar way, using composites of hard ceramic and elastic organic materials.

Head armour in the form of a helmet is equally if not more important, since a head wound typically requires immediate evacuation from the battlefield. We often joke that 'one cannot think after putting on the helmet'. That is likely a comment in jest to illustrate the weight and discomfort from wearing a helmet. However, the importance of a lightweight and durable helmet cannot be overstressed.

A particularly relevant biophysical wonder is in the design of a woodpecker's skull, which can withstand a shock of 60,000 grams of force without damaging the brain. Researchers at the University of California, Berkeley, have identified four critical features, relating to strength, flexibility, the minimisation of vibrations and the reduction of force, which have already been utilised in the design of new products subject to high impact, including crash helmets and flight data recorders.[23]

How about self-healing armour? In metallurgy, the paradigm is binary opposites. Armour which has been damaged has to be replaced entirely or risk its user being put out of action. But from a biological perspective, the skin is capable of self-healing (unless it is subject to a particularly serious burn), so why should armour be any different?

The abalone shell is a case in point. Besides being tasty, abalones shells are light yet extraordinarily tough—1000 times more energy is required to break the shells than to fracture the toughest man-made ceramics. And when cracked, the shells can repair themselves. The abalone's toughness derives from layers of tiny calcium-carbonate plates that when struck, glide over one another to absorb the shock. If cracks develop, the plates simply grow back together. Researchers at Princeton University are modelling the abalone's self-healing property in relation to structures that can be built in space, although similar principles could apply to military vehicles which are prone to damage in battle.[24]

Individual combat performance

From an operational perspective, urban operations are difficult because buildings are hard to clear. But a gecko can scale up and down buildings effortlessly. Its secret lies in the composite structure of its feet, where every single toe pad is covered with millions of keratinous hair-like bristles called setae. Each one in turn branches into hundreds of flat tips called spatulas, which make intimate contact with surfaces. This fibrillar array achieves adhesion primarily by what is known as non-covalent interaction between the spatulas and the surface. Theoretically, gloves incorporating such spatulas could generate an adhesion force comparable to the body weight of 500 men.[25] If it was integrated into an exoskeleton incorporating the weight-carrying properties of insects, its user would have both tremendous strength and the ability to scale significant heights.

Currently, militaries fight with night vision goggles but they frequently get foggy in our tropical climate when we sweat, even at night! Bats use echo-location and snakes use pit organs to feel the presence of warm bodies. Based on the echo-location used by bats to find their way and avoid even small objects in total darkness, a UK technology company has designed and manufactured an 'UltraCane' to assist the vision-impaired.[26] It uses sound waves to locate objects in front of the user via a small electronic echo-location device attached to the cane, which provides sensory feedback through the cane's handle. While this was intended for the visually-impaired, it could be adapted for soldiers to use in the dark.

In another study, scientists have discovered that vipers, pythons and boas have holes on their faces called pit organs, which contain a membrane that can detect infrared radiation from warm bodies up to one metre away.[27] At night, these pit organs allow snakes to 'see' an image of their predator or prey. This is akin to an infrared camera and its adaptation, as a complement to night vision goggles, might allow soldiers to see through camouflage or foliage that would otherwise fool their eyes.

Systems warfare

The current intelligence assets of typical military forces are composed largely of assets that extend the coverage of sight and sound beyond the range of human limitations. With ongoing technological improvements, these collection assets have reduced in size and improved in durability. However, they pale in comparison to what abounds in nature, where unmanned aerial vehicles in the form of flies can take off and land in any direction, change course in thousandths of a second, and use different wing motions to create backspin and air vortices that create lift.[28] Imagine the potential uses if those capabilities could be replicated in military UAVs.

Similarly, land reconnaissance, bomb diffusion and counter-mining operations might be done by nano-machines with the capabilities of cockroaches, which are highly manoeuvrable in complex terrains and undaunted by hip-height obstacles and slopes up to 24 degrees.[29] They could be augmented by

technologies incorporating the olfactory faculties of lobsters and silk-moths, both of which are able to detect friends, foes and TNT far more efficiently than any human or any current technology.[30] Lastly, imagine a horde of sand flea-like nano-machines, jumping forward 30 feet into the air as they reconnoitred an enemy position. If the imagery from each could be pieced together to form a macro-picture, the potential battlefield awareness would be unprecedented.[31]

Or what about the auto-sensing of chemical and biological threats? Here, the sensing capabilities of the Morphos butterfly are a useful case in point. In 2010, the US Defense Advanced Research Projects Agency (DARPA) awarded General Electric a US$6.3 million grant to further develop a project to replicate the nano-structures from the wing scales of butterflies.[32] Research has uncovered that the scales on the wings of Morphos butterflies can detect molecules in the atmosphere, changing their spectral reflectivity depending on exposure to different vapours, with their response 'dramatically outperform[ing] that of existing nano-engineered photonic sensors'.[33] Scientists are working on the development of similar sensors that could be embedded in clothing, with the capability to change colour on detecting chemical or biological threats.
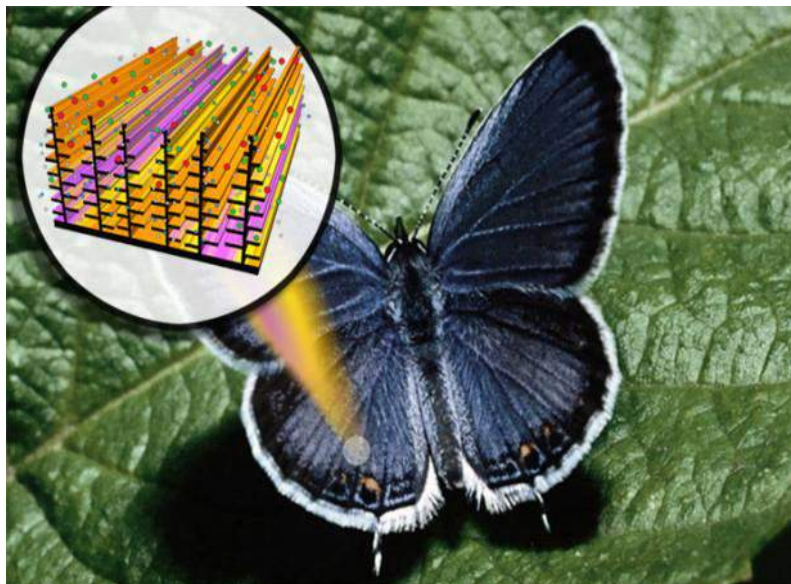

Figure 5. Exploded zoom of nano photonic sensor 'scales' on a butterfly wing
(measuring 50 by 100 microns each)[34]

A further biomimicry development relates to the detection of objects by radar. Metallurgy is the natural nemesis of radar systems, as the cross section of a metallic object 'bounces back' radio waves to expose its presence. Modern technology has tried to reduce this bounce-back through the use of graphite-based advanced materials, rounder edges and by painting surfaces to absorb radiation.[35] However, in nature, all moths have naturally-occurring anti-reflective surfaces in their eyes, consisting of tiny protruding bumps that keep moths safe from predators by preventing light from reflecting in their eyes.

Researchers at the University of Delaware have adapted these anti-reflective ideas and created surfaces in which microwave energy is transmitted with very little reflection over large ranges of frequency and bandwidths.[36] A particular application is the development of anti-reflective surfaces within an antenna system, enabling it to transmit yet avoid detection by radar.

Animal-like robots are another development. Unmanned drones reportedly spied on Osama bin Laden the night before the special operations raid that killed him in Pakistan.[37] And combat engineers use robots to assist in detecting and neutralising chemical, biological, radiological and explosive devices. Now, imagine

unmanned land vehicles as fast as a cheetah and armed with weaponry. Such a four-legged robot is under development by the US company Boston Dynamics, with funding from DARPA.[38]

It is envisioned that the Cheetah robot will be faster than any human, as well as having incredible agility, with the ability to make tight zigzagging turns, similar to its namesake, and being able to stop suddenly. How it might be used in combat is speculative, noting that 'DARPA won't directly say there's a military application for RoboCheetah itself, but the program was kicked off in order to address mobility limitations of [current] bomb-disposal robots'.[39]
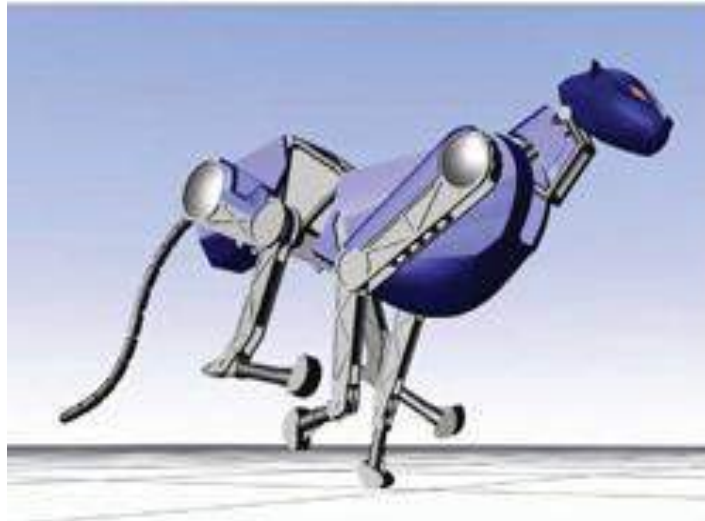

Figure 6. Boston Dynamics' Cheetah robot

Yet another area of development is in cyber warfare. While information communication technology has facilitated 'Information Knowledge-Enabled Command and Control' and network-centric warfare, the reliance by modern militaries on such technology has also exposed their vulnerability to its degradation. Hence, cyber defence has become increasingly important, as affirmed in a recent address by Singapore's Minister for Defence.[40]

As unlikely as it may seem, the operating concept of ants is one area of biomimicry under examination. By looking at the way ants call for backup and overpower invaders through sheer numbers, scientists at the Pacific Northwest National Laboratory in the US have devised a 'digital ant' to help human operators spot threats to computer systems more quickly.[41] Unlike traditional security devices, which are static, these 'digital ants' wander through computer networks looking for threats, such as 'computer worms' or viruses. When a threat is detected, an army of ants will converge on the location and help draw the attention of human operators, including by generating an automated 'scent' to attract more ants and thus produce the swarm that marks a potential computer infection.

Conclusion

Biomimicry presents many exciting possibilities for military technology. While it is clearly an unconventional form of technology, it arguably is one that modern militaries should embrace, albeit biomimicry is not without its challenges. Akin to most research and development programs, extensive resources of time and money are essential. And even then, the results may be problematic, as there are many uncertainties in learning from nature.

Notwithstanding its challenges, military technologists should be doing more to bridge the current research between academia, commercial companies and the military into biomimicry. Collaborations through these networks would better allow next-generation armed forces to benefit from biomimicry ideas and technologies and customise them to their local needs.

Whether biomimicry will prove to be the next paradigm shift in warfare will largely depend on such collaborative endeavours, as well as the ability of 'futurists' to break through the mindset that warfare involving metallurgy and fires is the most reliable mode.

History would tell us that when China invented fire powder and used it for celebratory fireworks in the Song dynasty, Europeans were still happily fighting with pikes and swords in the Middle Ages.[42] It was the curiosity and willingness to venture into uncharted waters that enabled these scientific breakthroughs. The same can be same for the invention of the atomic bomb during World War 2.

One thing is clear, nature is unique and wonderful. Learning from and about nature, since the Age of Enlightenment, has led to the immense knowledge creation of the modern day. Incorporating biomimicry into the next-generation armed forces is in line with this never-ending human quest of introspective learning and zealous discovery.

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Notes

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Joint Command and Control of Australian Airspace

Squadron Leader Peter Hartley, Royal Australian Air Force

Introduction

Aviation is an industry of national strategic importance and a major contributor to Australia's economic prosperity.[1] The Australian Government considers Australia's airspace to be a national resource and the airspace management network to be a vital element of national infrastructure.[2] Accordingly, the Government has enacted airspace legislation and regulations, and allocated resources to ensure a safe and efficient airspace system, understandably focused on commercial aviation.

While the ADF is not strictly bound by civil aviation regulations, Defence is obliged—as a consequence of the concurrent civil and military use of airspace—to accord with civil regulations. However, if one extrapolates Australia's airspace as a national resource to Australia's national water or electricity resources—and considers Defence as a substantial owner, manager and user of that resource—it could be concluded that Defence's use of airspace is not being achieved with adequate focus on 'value-for-money'.

A key principle of Australia's airspace regulation is the 'flexible use of airspace', whereby civil and military airspace management agencies are expected to collaborate to achieve efficiencies through airspace harmonisation.[3] To that end, the Government in early 2015 commissioned the procurement of a Civil-Military Air Traffic System (CMATS) to provide a common Defence and civilian air traffic management platform.[4] According to a statement by the Minister for Defence at the time, the system will enable Defence air traffic controllers to 'manage the various mix of air traffic and create a seamless flow of national and international air traffic'.[5]

Concurrently, the ADF is transitioning to technologically-advanced air-centric weapon systems that will engender cross-Service information sharing, including data relating to battlespace awareness.[6] Provided the associated airspace command and control structure supports joint force objectives, these capabilities will enable informed, real-time decision-making relating to the integration and deconfliction of tri-Service platforms and joint fires. However, the simultaneous introduction of CMATS and the next generation of weapon systems is arguably drawing Defence into an era of airspace usage for which the ADF may be ill-prepared to manage.

Defence currently administers airspace under single-Service arrangements without an overarching policy to holistically align Defence airspace management with national strategy and joint force principles. Defence's ability to comply with national airspace policies and support future joint capabilities is degraded by its disparate command and control architecture which, outside major joint exercise periods, is largely not structured to support cross-Service decision making or to accord with real-time flexible use of airspace.

This article contends that the airspace management requirements of national policy and technologically-advanced air-centric capabilities exceed the decision-making abilities of Defence's airspace command and control structure. Furthermore, the ADF's current single-Service command and control architecture is inadequate to contend with the myriad airspace considerations and accountabilities—including Commonwealth legislation and regulations, Defence capital investment, airworthiness, joint force construct and Government imperatives—associated with the flexible use of airspace.

The article argues that Defence should adopt a joint airspace command and control structure to complement CMATS by applying the principles of ADF Joint Airspace Control doctrine to facilitate real-time and near real-time decision-making, thereby achieving the Government's intent for harmonised airspace management and the integration of the ADF's next generation of joint weapon systems.

Commonwealth airspace strategy

Australia's aviation industry is described within the *National Aviation Policy White Paper* as a 'critical enabling industry for the broader [Australian] economy'.[7] This statement is an acknowledgement of Australia's reliance on aviation for both business prosperity and social cohesion, with the sector generating six per cent of Australia's 2013 GDP through its transportation of over 144 million passengers via some 1.4 million flights.[8] These figures follow yearly increases with aircraft movements rising by 37 per cent since 2002, at an average yearly growth of around 3 per cent.[9]

The Australian Government considers aviation productivity to be of national strategic importance and has enacted a regulatory framework that provides federal governance to its supporting infrastructure and policies.[10] Included within this legislation are the foundations for the regulation and management of Australia's airspace, which is considered a key enabler of aviation, and identified within the *Australian Airspace Policy Statement* as a 'national resource'.[11] Deputy Prime Minister Warren Truss reinforced this airspace-aviation relationship when he said in September 2014 that 'in planning for the future of the aviation industry, nothing is more important than air traffic management'.[12]

As an air traffic service provider for both civil and military aircraft from 12 of Australia's 36 controlled aerodromes/air bases, Defence is a significant contributor to the nation's air traffic management system.[13] Defence delivers air traffic services for around 230,000 civilian aircraft movements each year, while Defence's airspace usage with and without air traffic services must be safely integrated with adjacent civil airspace usage.[14] Government policies and strategies relating to airspace and air traffic management are therefore as applicable to Defence as they are to civilian stakeholders.

The Government's air traffic management policies encapsulate the governance of all Australian airspace, including restricted areas administered by Defence, under a common *Airspace Act* and subordinate *Airspace Regulations*.[15] While Defence requires prioritised and occasionally exclusive access to airspace to undertake training and operations, it must do so within the legislative framework established by the Commonwealth.[16]

The Minister for Defence has delegations under the *Defence (Special Undertakings) Act 1952* to declare prohibited or restricted areas, including airspace above those areas.[17] However, as the *Airspace Act 2007* accounts for all Australian airspace and includes the matter of national security, Defence administered airspace is declared under the provisions of the *Airspace Regulations 2007* and *Australian Airspace Policy Statement*, which delegates responsibility for the design and regulation of Australian airspace to the Civil Aviation Safety Authority (CASA).[18]

In recognition of its unique airspace requirements, under the *Airspace Regulations 2007*, the ADF is a nominated air traffic services provider and is entrusted with the management of airspace, as delegated by CASA, for the conduct of Defence operations.[19] As an air traffic services provider, Defence is beholden to the *Airspace Regulations 2007* for the administration of its airspace, and to the *Australian Airspace Policy Statement*, which ensures all Australian airspace (civil and military) is centrally regulated for the common purpose of supporting government objectives.[20] Accordingly, all Defence airspace declarations are subject to civil regulation, and operations within such airspace must be considerate of the Government's national strategy for airspace management.

That strategy includes close cooperation between CASA, the civil air traffic services provider (Airservices Australia) and Defence to ensure the 'administration of Australia's airspace is both safe and efficient'.[21] The culmination of this strategy is manifested in the *National Aviation Policy White Paper* and subordinate *Air Traffic Management Policy Directions* document released by the Government to describe Commonwealth policy for flexible use of airspace and civil-military harmonisation through commonalities in air traffic management systems.[22]

In direct support of its airspace strategy, the Government commissioned a joint Defence-Airservices Australia project (known in Defence as Air 5431 Phase 3 [Air 5431], and in Airservices Australia as 'OneSky') to procure a single air traffic management system (CMATS) common to both providers. In reference to this project, Deputy Prime Minister Truss detailed government expectations for seamless compatibility between Airservices Australia and Defence by stating that he is 'looking forward to working

with ... the Minister for Defence ... in supporting our agencies' joint commitment to a harmonised national air traffic system'.[23]

CMATS is targeted at supporting Australian legislation and policy by delivering efficient use of airspace and providing equitable access to airspace for all users.[24] However, the project's focus on air traffic services and air traffic management systems means that Defence's Air 5431 will only affect those airspaces immediately surrounding its air bases and will not, therefore, deliver the expected efficiencies to the majority of Defence's airspace. Unlike Airservices Australia's operations, the majority of Defence's airspace is not tactically managed or controlled by an Air Traffic Service unit, and will not be subject to the air traffic management surveillance or administration delivered by CMATS.

However, by harmonising Air 5431 with OneSky, Defence has committed itself to the development of joint civil-military concepts in airspace organisation, and an enactment of the intent of the *National Aviation White Paper* and *Air Traffic Management Policy Directions* with regard to the flexible use of airspace.[25] In practice, under the *Airspace Regulations 2007* and *Australian Airspace Policy Statement*, Defence is already obliged to consider the use of its allocated airspace in the context of a 'national resource' and to facilitate civil operations wherever practicable.

With the Commonwealth committing in excess of $500 million towards Defence's new Air Traffic Management system, the Government and civil aviation industry will rightly and increasingly demand a return on this investment in terms of efficient use of airspace.[26] Under Air 5431, Defence may achieve efficiencies within its Air Traffic Services-managed airspaces associated with its air bases; however, the ability to replicate similar flexibility within its range and exercise area airspaces, such as the Woomera Restricted Areas, Shoalwater Bay Training Area and Eastern Australia Exercise Area, will present challenges for the ADF.

Defence's range and exercise areas airspaces are managed by tri-Service tactical warfighting units or civilian range staff, who are neither qualified nor equipped to issue tactical clearances or instructions to civilian aircraft, and therefore fall outside the realm of Air 5431/OneSky. Yet it is these airspaces that create the greatest disruption for the civil aviation industry, as the airspace volumes inevitably conflict with civilian air routes and are of such magnitude as to necessitate significant aircraft deviations with consequent economic and environmental implications.[27]

As the Capability Manager for Defence Air Traffic Services, the Chief of Air Force signalled intent for Air 5431 to address civil deviations, and for Air Force airspace management to meet Government policy, when he stated in December 2011 that:

> A single national Air Traffic Management system will remove the inherent limitations from separately managed pockets of airspace.... It will enable Airservices and Defence to dynamically manage airspace volumes and could ultimately enable less restrictive airspace construct to enhance both military and civilian operations.[28]

However, under the current ADF airspace command and control construct, Army, Navy and Air Force range and exercise area airspaces operate under disparate management arrangements beyond the influence of Air Traffic Management systems—the ADF may, therefore, be at risk of over-promising in terms of linking Air 5431 to improvements in Defence's part of nation-wide airspace management.

Australian airspace regulations and policies reference Defence airspace as a single entity, implying management by a single organisation; hence the expectation of Government and the civil industry is that Air 5431-OneSky collaboration will apply to all ADF airspace and facilitate increased flexibility in nation-wide airspace use.

The informal cross-Service airspace management arrangements within Defence defy this premise such that Air Force's cooperation with Airservices Australia will not result in greater efficiencies within Army and Navy administered airspace, and will have minimal efficiencies within Air Force's non-Air Traffic Services managed airspace, such as those associated with Woomera or Williamtown's 'fighting' airspace. Although Defence will continue to use airspace for purposes that are unsafe for civil aviation, regardless of Air 5431 or OneSky, there is an increasing obligation to share with civil aviation the airspace that

Defence is *not* using, as well as to share the airspace that Defence *is* using whenever it is safe to do so. To do otherwise undervalues this national resource.

To rectify Defence's airspace command and control predicament and allow Air 5431 to facilitate the Government's expectations in increased flexible use of airspace, Defence needs to devise a method for uniting each of the Services' airspace management practices via an efficient system that supports a common civil-military harmonisation policy. Defence's Air 5431-OneSky collaboration would therefore benefit from an associated internal Defence process that correlates each Service's airspace management with a central governance and accountability model that defines a single Defence airspace management policy to meet the objectives of the *Australian Airspace Policy Statement* and *Air Traffic Management Policy Directions*.

Airspace airworthiness

As a function of the Defence Aviation Safety Program, the *Defence Operational Airworthiness Manual* promulgates a clear chain of command for the airworthiness regulations associated with its airspace control services, including air battle management, air traffic services, battlefield airspace control, ship aviation facilities and the management of air weapons range airspace.[29] Each control service is conducted under the authority of an Operational Airworthiness Authority, which is directly responsible to its relevant Service Chief and accountable to the Defence Aviation Authority (Chief of Air Force) for the safe conduct of those services.[30]

To meet their accountabilities, the Operational Airworthiness Authorities are required to publish an operational document detailing airspace management procedures, inclusive of compliance with the *Airspace Regulations 2007* and government policy.[31] As each Service possesses an Operational Airworthiness Authority with airspace-related responsibilities, Army, Navy and Air Force have each published an array of Service-specific documents that promulgate airspace management procedures.[32]

While these documents are intended to meet the requirements of the *Defence Operational Airworthiness Manual*, they do so in isolation owing to the absence of an overarching Defence airspace management policy and corresponding hierarchy of documentation. Each Service therefore individually judges how to comply with Government policy as there are no ADF-wide standards against which to assess compliance with the airspace harmonisation requirements of the *Airspace Regulations 2007*, *Australian Airspace Policy Statement* and *Air Traffic Management Policy Directions.*

Defence's management of tactical airspace documentation and procedures occurs in isolation within the Services and without a formal means for cross-referencing such procedures with strategic intent.[33] The resulting effect is that each Service may interact with civil industry under varying objectives, priorities and processes, and military aircraft may operate under dissimilar procedures as they move between Defence airspaces.

Furthermore, as each Service's aircraft routinely operate within the other Services' airspaces, Operational Airworthiness Authorities hold vested interests in the airspace management procedures of the other Services and require the ability to dictate minimum airspace preconditions for particular aircraft types in all Defence airspaces.[34] The *Defence Operational Airworthiness Manual* supports this provision, as one of its objectives is to 'prescribe common minimum requirement' across Defence.[35]

The development of a centralised ADF airspace management policy would address these airworthiness issues through the articulation of common ADF standards designed to form the basis of each Service's procedures, while facilitating unambiguous compliance with strategic intent. A strategic policy would also establish the metrics required to gauge the success of ADF airspace management and provide the foundation on which the Defence Aviation Authority and Operational Airworthiness Authorities may assess their accountabilities.[36]

'Train as you fight' – joint airspace command and control

Warfighting skills of the modern ADF involve prolific tri-Service use of airspace to support munitions trajectories and aircraft, as well as the requirement to monitor airspace to detect and track an enemy's air

movements. Therefore, although each Service principally focuses their 'Raise, Train and Sustain' activities towards their primary domain, airspace has become the common physical environment that links the ADF's collective training. Australian airspace is therefore a joint domain, where the interaction of Defence's complex and dynamic air orientated activities requires meticulous coordination and planning to ensure safety and achieve effective outcomes.

As Defence airspace is managed in accordance with individual Service priorities and procedures, real-time decision-making affecting its tactical use has no formal means of occurring between Services. With disparate accountabilities peculiar to individual Services, operators within each of the Services have no requirement to appease their counterparts in facilitating the flexible employment of airspace without formal direction from within their respective Service's disciplinary chain-of-command.

Furthermore, with the added complexity of subjugation to civil requirements in accordance with legislation, current Defence airspace command and control also impacts the ADF's ability to meet its national obligations. Using the Eastern Australia Exercise Area airspace as an example, civil aviation industry queries regarding that airspace's use are directed to the Chief of Air Force, as the Defence Aviation Authority, yet the command of that airspace resides with Chief of Navy.[37] Under current arrangements, cross-Service tactical airspace decisions pass through strategic channels, when tactically focused decisions are required at the operational or tactical levels to support real-time or near real-time decision-making.

To capitalise on its dynamic characteristics and overcome procedural bureaucracies and Service cultural differences, joint airspace should ideally function under a mechanism that is responsive to variations in Defence tasking and integrates the Services' activities according to established priorities. This joint concept is reflective of Government direction which decrees that the ADF needs to be 'designed, developed and operated as an integrated, joint force across sea, land and air domains'.[38]

The *2013 Defence White Paper* appointed the Vice Chief of Defence Force as the Joint Capability Authority to develop 'architecture designed to steadily improve the integration of single Service capabilities and systems'.[39] Accordingly, Vice Chief of Defence Force has promulgated the *Future Joint Operating Concept 2030* to aid capability development and 'inform doctrine, training and education to support the preparation of the Joint force'.[40] The *Future Joint Operating Concept 2030* subsequently identifies that collective training 'must be almost continuously joint if the ADF is to excel at joint war fighting' and 'involve the organisations with which the joint force will operate'.[41]

In lay terms, the *Future Joint Operating Concept 2030* requires that the ADF must train as it fights and, since it will fight as a joint force, it should train as a joint force using the command structures applicable to operations. Currently, ADF airspace command and control falls short of these aspirations.

The ADF's operational airspace command and control structure, known as the 'airspace control system', is described within *Australian Defence Doctrine Publication 3.3 (ADDP 3.3) – Joint Airspace Control.* The airspace control system comprises 'the people, procedures and equipment required to deliver airspace control', and is reliant on 'networked operations' and utilises a 'single Airspace Control Authority [to ensure] unity of effort through centralised planning and control'.[42] The objective of this airspace control system is to de-conflict and synchronise airspace users, inclusive of civilian operators, while increasing operational effectiveness through the integration of varying platforms and weapons systems.[43]

The ADF's operational airspace control system ensures Defence airspace is centrally administered under a common strategy with the necessary accountabilities and communications connectivity, is flexible in its application, and fosters civilian harmonisation to yield a domain supportive of joint and civilian operations. While this system was developed specifically to uphold the complexities and tempo of war-like operations, its foundations are reflective of the Government's intent for Australian airspace management, the principles of the *Future Joint Operating Concept 2030* and the Defence Aviation Safety Program's direction on accountability and commonality of processes. *ADDP 3.3* therefore appears to describe an appropriate policy for Defence airspace administration; however, through the deliberate nature of ADF doctrine, *ADDP 3.3* 'is not policy and does not have legal standing'.[44]

Further, *ADDP 3.3* is 'joint doctrine for the guidance of ADF operations', which conforms to the Chief of Defence Force Directive that 'joint doctrine relates to the conduct of ADF military operations'.[45] The

authority of *ADDP 3.3* therefore does not translate to Raise-Train-Sustain activities within the single Services; the joint and civil harmonisation procedures contained within the document are reserved for operations and, in the absence of a corresponding 'peace-time' airspace management policy, the ADF relies on informal means for exercising cross-Service control of Australian airspace.

Combining the principles of *ADDP 3.3* with the Government's airspace and air traffic management policies, the *Future Joint Operating Concept 2030* and the Defence Aviation Safety Program would allow Defence to adapt a warfighting orientated command and control structure to the administration of its Australian airspace. This would facilitate its function as a joint capability and deliver efficiencies associated with decision making and harmonising its tactical employment across Defence.

Moreover, this would allow the ADF to operate within Australian airspace under a command and control structure identical to that utilised during operations and major joint exercises. ADF airspace would therefore function under an enduring, nation-wide process that supports Raise-Train-Sustain activities and operations, and would negate the need to establish temporary airspace command and control structures to suit individual tasks.

Linking the warfighters

Centralised command and control of airspace is associated with the wider issue of battlespace awareness. The airspace control system operates as a function of the ADF's networked force by linking airspace users to exchange situational awareness information for the purpose of platform integration and deconfliction.[46] As the ADF enhances its air-centric capabilities, the Services require a corresponding enhancement in their ability to join this network and obtain battlespace awareness.

The sensors inherent within capabilities such as the F-35A, Air Warfare Destroyer, E-7, EA-18G, the Counter Rocket Artillery and Mortar System and CMATS, delivered under Air 5431 and synergised through the Vigilaire command and control system, will all contribute to joint battlespace awareness. The technology they deliver and the battlespace within which these systems operate should be supported by a command structure that provides the ability to react to the information they share.[47] As this information includes data relating to the synchronisation and deconfliction of air assets and weapons systems, airspace management is a consideration within the command and control structure.

The technology-based network principles of *ADDP 3.3* complement the envisaged connectivity of the ADF's next generation of weapons systems. The associated joint command and control structure supports the flow of information between platforms and headquarters elements for the purpose of real-time, cross-Service decision making to achieve an effect based on joint force requirements.

A joint battlespace command and control network supportive of emerging technology is reflected in each of the Services' future operating concepts. The Navy, for example states that 'joint force integration' is required to separate friendly forces, while the Adaptive Army 'seeks to ensure that the generation and preparation of land forces is ... aligned with the ADF's joint command framework'.[48] The Air Force's vision for its recently-announced plan to integrate its new systems into a linked network, known as Plan Jericho, seeks to 'develop a future force that is agile and adaptive, fully immersed in the information age, and truly joint'.[49] Each of the Services therefore recognises the need to contribute to a joint command structure to support the capabilities of impending technologies.

Coincident with Defence's state-of-the-art acquisitions, growth in civil aviation has also fostered the development of advanced navigation systems to address the issue of airspace congestion.[50] As civil air traffic growth threatens to exceed airspace capacity, advanced navigation is creating non-standard 'user-preferred' routes and trajectories that maximise airspace use, achieve fuel and time efficiencies and are not considerate of ADF's static airspace boundaries.[51]

With economic benefits to be gained, coupled with the Government's policy on flexible use of airspace, Defence is likely to experience increased pressures for civil aviation access to military airspace congruent with these new civil navigation capabilities.[52] The extant procedurally-based process of managing Defence's weapons ranges and vast exercise airspace is too archaic to react to contemporary civil flight management systems, which creates substantial friction between the civil aviation industry and Defence. Leveraging its requirements to flexibly support its own future platforms, a joint command structure may

provide Defence with the decision-making mechanism required to adapt military airspace management to global advancements in aviation technology.

The operational practices and supporting actions required to deliver a networked joint force will be challenging for Defence. It would be ambitious for the ADF to assume that it may operate each Service's future weapon platforms in isolation during peace-time, and expect to become immediately proficient in their functionality in a joint environment at the outset of operations. The technologies Defence has acquired are complex and require expert manipulation and integration to realise their potential. Additionally, contemporary joint operations are commonly conducted with a degree of integration with civil aviation either supporting the joint/combined force or as part of host nation's normalisation.

The ADF should therefore seek to replicate operational conditions during the conduct of its Raise-Train-Sustain activities to obtain proficiency in these new technologies and operational scenarios. To achieve this, appropriate command and control structures (including policy, systems and people) should be established to enhance linkages between the Services' capabilities and remove barriers across the Services and between Defence and civil aviation. The Chief of Air Force articulated this aspiration when stating that 'breaking down walls, breaking down stovepipes of Defence is central if we are actually going to realise the full capability of fifth gen[eration] capabilities'.[53]

Conclusion

The Government's national strategy on air traffic management articulates a requirement for Defence and the civil aviation industry to apply the principle of flexible use of airspace. Project Air 5431 and OneSky are expected to meet this strategy; however, in the absence of a documented Defence airspace management policy, the informal airspace coordination arrangements between Services will not deliver efficiencies in Defence's significant use of this 'national resource' beyond those associated with air traffic services for ADF air bases. Air 5431 should therefore be accompanied by a Defence review of airspace command and control to unite the Services' airspace decision making and meet the Deputy Prime Minister Truss' expectation that OneSky 'will unify Australian skies'.[54]

Concurrent with Air 5431/OneSky, the ADF is preparing for the introduction of multiple next generation systems, acquired to generate a joint force.[55] The sensor and networking capabilities of these platforms require a command and control structure designed to integrate the systems into the joint force and support cross-Service decision-making. The air-centric nature of these platforms and their abilities to contribute to battlespace awareness necessitates airspace management as a key consideration for their integration. *ADDP 3.3* nominates a command and control structure suited to these requirements. Adapting *ADDP 3.3's* principles to the Raise-Train-Sustain environment will unite the Services' airspaces under a common command structure that develops expertise in joint operations, while enabling the decision-making necessary to comply with Government's strategy in national airspace administration and the defence of Australia.

Squadron Leader Hartley joined the RAAF as an Air Traffic Control Officer in 1994 and has held a range of tactical control and staff positions within 44 Wing. He controlled at Baghdad International Airport during Operation FALCONER/CATALYST and coordinated civil-military integration from the Combined Air and Space Operations Centre during Operation CATALYST/SLIPPER. Following his role as Chief Joint Airspace Control Cell in the Headquarters Joint Operations Command Air and Space Operations Centre, he attended the Australian Command and Staff College in 2014. Squadron Leader Hartley is currently posted as the Executive Officer to 453 Squadron.

Notes

1   Australian Government, *National Aviation Policy White Paper*, Department of Infrastructure and Transport: Canberra, 2009, p. 2. See also The Hon Warren Truss MP, Deputy Prime Minister and Minister for Infrastructure and Regional Development, 'Preparing for the Future: Address to Airservices Australia's Waypoint 2014 Conference', National Convention Centre, Canberra, 4 September 2014, available at <http://www.minister.infrastructure.gov.au/wt/speeches/2014/wts020_2014.aspx> accessed 14 May 2015.

2   Department of Infrastructure and Transport, *Australian Airspace Policy Statement 2012*, Australian Government: Canberra, 2012, p. 3, available at <http://www.infrastructure.gov.au/aviation/aaps/index.aspx> accessed 14 May 2015.

3   Flexible use of airspace is intended to enable the adaptable and flexible management of airspace, providing improved access to restricted airspace as a resource, increased air traffic management capacity to meet forecast growth in air traffic, support the transition to user preferred trajectory, and roam-free capability for ADF operations. It will ensure that restricted airspace segregations will be managed dynamically and restrictions on any particular volume of airspace will be minimised, thereby optimising user access to airspace resources and enhancing airspace capacity: see Australian Strategic Air Traffic Management Group, *Air Traffic Management: a strategic vision for Australia, Part B: Operational Evolution Document*, 2007, p 22, available at <http://astra.aero/strategicplan/docs/ATM_Strategic_Plan_2007_PartA.pdf> accessed 14 May 2015.

4   Acting Prime Minister and Minister for Infrastructure and Regional Development and Minister for Defence, 'Australia's OneSky: the most advanced, integrated air traffic control system in the world', joint media statement, 27 February 2015, available at <http://www.minister.defence.gov.au/2015/02/27/acting-prime-minister-and-minister-for-defence-joint-media-statement-australias-onesky-the-most-advanced-integrated-air-traffic-control-system-in-the-world/> accessed 1 March 2015.

5   Acting Prime Minister and Minister for Infrastructure and Regional Development and Minister for Defence, 'Australia's OneSky'.

6   Department of Defence, *Network-Centric Warfare Roadmap 2007*, Defence Publishing Service: Canberra, 2007, Chapter 8.

7   Australian Government, *National Aviation Policy White Paper*, p. 2.

8   Truss, 'Preparing for the Future'; and Department of Infrastructure and Regional Development, *2013 Airport Traffic Data,* available at <http://www.bitre.gov.au/publications/ongoing/airport_traffic_data.aspx> accessed 24 November 2014.

9   Department of Infrastructure and Regional Development, *2013 Airport Traffic Data*.

10   Australian Government, *National Aviation Policy White Paper*, p. 2.

11   Department of Infrastructure and Transport, *Australian Airspace Policy Statement 2012*.

12   Truss, 'Preparing for the Future'.

13   Defence provides air traffic services from RAAF Air Bases Amberley, Darwin, East Sale, Edinburgh, Tindal, Townsville, Pearce, Richmond and Williamtown, from Naval Air Station *HMAS Albatross*, and from Army Aviation Training Centre Oakey. Additionally, RAAF provides as-required air traffic services at RAAF bases Derby, Learmonth, Scherger and Woomera.

14   Details sourced from 44 Wing airfield statistics website (only available internally to Defence).

15   A Restricted Area is an airspace of defined dimensions, above the land or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions. Defence uses Restricted Areas to segregated hazardous military activities from other non-compatible airspace users (for example, for live firing or combat flying training). Definition obtained from the joint Airservices Australia and Department of Defence, *Manual of Air Traffic Services,* Version 31, effective from 4 March 2015, p. 49.

16   Department of Infrastructure and Regional Development, *Air Traffic Management Policy Directions*, Commonwealth of Australia: Canberra, 2012, p. 8.

17   *Defence (Special Undertakings) Act 1952*, Section 14.

18   Department of Infrastructure and Transport, *Australian Airspace Policy Statement 2012*, paragraphs 11-3; and *Airspace Regulation 2007*, Part 2, Regulations 5-7.

19   *Airspace Regulation 2007*, Part 2, Regulation 13 (3).

20   The Civil Aviation Safety Authority (CASA) may delegate the ADF airspace management responsibility. In accepting such delegation, the ADF must manage the associated airspace under the same conditions and obligations as that exercised by CASA: see *Airspace Regulation 2007*, Part 2, Regulation 13 (2); and '[t]he administration of Australian-administered airspace shall be in the best interest of Australia: see Department of Infrastructure and Transport, *Australian Airspace Policy Statement*, paragraph 8.

21   Department of Infrastructure and Transport, *Australian Airspace Policy Statement 2012*, paragraph 43.

22   Harmonisation of civil and military aviation procurement, provision of services, and training has significant potential for safety, operational and financial benefits for civil and military aviation users: see Department of Infrastructure and Regional Development, *Air Traffic Management Policy Directions*, p. 8.

23   Warren Truss, Minister for Infrastructure and Regional Development, 'Safeskies 2013 – Theme: People and Technology', speech to Safeskies conference, Hotel Realm, Canberra, 16 October 2013.

24   The object of the *Airspace Act* is to ensure that Australian-administered airspace is administered and used safely, taking into account protection of the environment, efficient use of that airspace, equitable access to that airspace for all users of that airspace and national security: see *Airspace Act 2007*, Part 1, Section 3 (b) and (c).

25   Phase 2/3 of Air 5431 will replace the existing Australian Defence Air Traffic System with the Defence Air Traffic Management and Control System for integration and harmonisation with Airservices Australia's Air Traffic Control Future Systems project: see Department of Defence, *Defence Capability Plan 2012,* Public Version, Defence Publishing Service: Canberra, 2012, p. 44; and The Civil-Military Air Traffic Management Committee will support Airservices Australia's and Defence's efforts to improve efficiency and effectiveness, productivity and operations, and support implementation of the single national air traffic management system, OneSky Australia: see Airservices Australia, 'Military Collaboration' in *Airservices Annual Report to Parliament 2013-14*, Airservices Australia: Canberra, 2014, p. 44.

26   Acquisition cost for Air 5431 phase 2/3 is $500m. Through-life support costs are to be determined: see Department of Defence, *Defence Capability Plan 2012*, 45; and OneSky's primary role is to plan, develop and implement a new air traffic management platform to meet future needs. It also represents an opportunity to realise a level of harmonisation with Defence: see Airservices Australia, 'Onesky Australia', available at <http://www.airservicesaustralia.com/projects/onesky-australia/> accessed 25 November 2014.

27   An associated area for greater civil/military cooperation in the future is the continuing development and adoption of the flexible use of airspace concept. Flexible airspace aims to maximise the use of available airspace volumes while providing the required segregation for non-compatible activities. Flexible use of airspace optimises civil access to military airspace and vice versa … when the overall benefit of such flexibility to civil and military airspace outweigh the costs: see Australian Government, *National Aviation Policy White Paper*, pp. 123-4; and '[t]racking restrictions applied during military exercises (such as Pitch Black) affect commercial schedule and operations': see Civil Aviation Safety Authority, Office of Airspace Regulation, *Aeronautical Study of Darwin 2010*, version 1.0 July 2011, pp. 15-6; and 'Evans Head restricted areas impact on airspace efficiency': see Civil Aviation Safety Authority, Office of Airspace Regulation, *Aeronautical Study of Class E Airspace Between Port Macquarie and Ballina*, Version 3.0, 28 February 2012, p. 4; and 'Sydney Air Traffic Control was unable to secure diversion through the Eastern Australian Exercise Area Airspace, Sydney traffic was diverted up to 70NM and the airport's traffic capacity reduced': see Airservices Australia, 'Air Traffic Services Occurrence Report 0135540 – Request for partial release of Nowra Restricted Airspace', 11 March 2015.

28   Department of Defence and Airservices Australia, 'Brief to Industry on ATC Future Systems', media release, 20 December 2011, available at <http://news.defence.gov.au/2011/12/20/defence-and-airservices-brief-industry-on-atc-future-system/> accessed 30 November 2014.

29   Department of Defence, *Australian Air Publication 8000.010*, *Defence Operational Airworthiness Manual*, Department of Defence: Canberra, 2014, Section 9, Chapter 1.

30   Department of Defence, *Defence Instruction (General) OPS 02-2 – Defence Aviation Safety Program*, Department of Defence: Canberra, 2011, paragraph 22.

31   Department of Defence, *Australian Air Publication 8000.010*, Section 9, Chapter 1.

32   They include the *Manual of Air Traffic Services*, Tactical Procedures, *Defence Training Area Management Manual*, Australian Books of Reference, Australian Fleet Tactical Publications, Range Orders, *Defence Instruction (General) ADMIN 38-1 – Policy and Procedures for the use of the Woomera Prohibited Area and Woomera Test Facility*, Air Command Standing Instructions, air base-specific Standing Instructions and Orders, Aeronautical Information Publications and exercise-specific Airspace Control Plans.

33   For example, Air Force operates its aircraft within the Eastern Australia Exercise Area under the authority of the Air Force Operational Airworthiness Authority, while the airspace management procedures for that exercise area are devised by the Navy Operational Airworthiness Authority.

34   Aircraft separation standards are determined by the Operational Airworthiness Authority for each aircraft type: see Department of Defence, *Australian Air Publication 8000.010*, Section 9, Chapter 1.

35   Department of Defence, *Australian Air Publication 8000.010*, Section 3, Chapter 1, paragraph 12.

36   An important feature of the Defence Aviation Safety Program is the incorporation of the accountability principle, which holds that individuals and organisations are responsible for their actions and may be required to explain them to others. Commanders remain accountable for the actions of their staff: see Department of Defence, *Australian Air Publication 8000.010*, Section 1, Chapter 2, paragraph 1.

37   Eastern Australia Exercise Area (Restricted Areas R453A-P) Controlling Authority is Fleet HQ Potts Point: see Airservices Australia, *Designated Airspace handbook,* AirServices Australia: Canberra, 2014, Section 13, PRD 20-21.

38   Department of Defence, *Defence White Paper 2013,* Commonwealth of Australia: Canberra, 2013, p. 76.

39   Department of Defence, *Defence White Paper 2013*, p. 76.

40   Department of Defence, *Future Joint Operating Concept 2030*, Department of Defence: Canberra, 2011, p. 1.

41   Department of Defence, *Future Joint Operating Concept 2030,* p. 17.

42   Department of Defence, *ADDP 3.3 – Joint Airspace Control*, Edition 3, Defence Publishing Service: Canberra, 2012, p. 2-1.

43   Department of Defence, *ADDP 3.3– Joint Airspace Control*, p. 1-1.

44   Department of Defence, *ADDP 3.3 – Joint Airspace Control*, p. iii.

45   Department of Defence, *ADDP 3.3 – Joint Airspace Control*, iii; and CDF Directive 18/2013, reference ADC/OUT/2013/R15722455, dated 25 September 2013.

46   Department of Defence, *ADDP 3.3 – Joint Airspace Control*, pp. 1-5.

47   Current ADF command and control arrangements will need to respond to technology by altering structure and not just processes, as in the past: see Department of Defence, *ADDP 00.1 – Command and Control*, pp. 1-8.

48   Department of Defence, *Future Maritime Operating Concept - 2025: maritime force projection and control*, Royal Australian Navy: Canberra, undated, p. 11, available at <http://www.navy.gov.au/sites/default/files/documents/FMOC_2025_Unclassified.pdf> accessed 14 May 2015; Department of Defence, *Adaptive Planning: Army's Future Land Operating Concept*, Australian Army: Canberra, 2009, p. 43.

49   Royal Australian Air Force, 'Plan Jericho' booklet, available at <http://www.airforce.gov.au/plan-jericho/?RAAF-CrI57877JHUU/bo9YoJ64qWYIO7G/14Q> accessed 25 March 2015.

50   Relentless air traffic growth threatens to outstrip airspace capacity, and in particular, our capacity to deal with it safely. *Future Journeys 2013–2032*, the Airbus global market forecast, focuses on the predicted growth in the Asia-Pacific region, which the manufacturer says will account for 36 per cent of all new passenger aircraft deliveries, compared to 20 per cent for Europe and 19 per cent for North America: see Civil Aviation Safety Authority, 'Global aviation growth and safety' in *Flight Safety Australia*, 3 November 2014, available at <http://www.flightsafetyaustralia.com/2014/11/global-aviation-growth-and-safety/> accessed 1 April 2015.

51   Required navigation performance is a necessary enabler to transition from navigation along fixed routes to more efficient flex tracks and user preferred routes where effects of head wind can be minimised and benefits of tail wind maximised: see Civil Aviation Safety Authority, *Performance Based Navigation Implementation Plan: ICAO Resolution 36-23, Implementation of Performance Based Navigation and Approaches with Vertical Guidance*, Version 1, March 2010, p. 2, available at <http://www.casa.gov.au/wcmswr/_assets/main/media/pbn-plan.pdf> accessed 1 April 2015; and 'Airspace is a universal resource and should not be designated as purely civil or military…. Flexible use airspace research and development has demonstrated its close link with user preferred routes and trajectories, and collaborative trajectory planning as well as the critical importance of a shared model of airspace planning intent by pilots, airline operations/navigation planning personnel, controllers and other traffic manager': The Australian Strategic Air Traffic Management Group, *Air Traffic Management: a strategic vision for Australia, Part A: Operational Evolution Document*, 2007, p. 23, available at <http://astra.aero/strategicplan/docs/ATM_Strategic_Plan_2007_PartA.pdf> accessed 1 April 2015.

52   Harmonisation of civil and military aviation procurement, provision of services, and training has significant potential for safety, operational and financial benefits for civil and military aviation users: see Department of Infrastructure and Regional Development, *Air Traffic Management Policy Directions*, p. 8.

53   'RAAF's "Plan Jericho" to break down barriers to realizing F-35's full potential', in *Australian Aviation*, 30 May 2014, available at <http://australianaviation.com.au/2014/05/raaf-plans-to-break-down-barriers-to-realising-f-35s-full-potential/> accessed 18 March 2015.

54   Acting Prime Minister and Minister for Infrastructure and Regional Development and Minister for Defence, 'Australia's OneSky'.

55   Australia's maritime strategy requires an ADF designed, developed and operated as an integrated, joint force across sea, land and air domains: see Department of Defence, *Defence White Paper* 2013, p. 76.

The Dragon and The Eagle in the South China Sea: is conflict between China and the US inevitable? [1]

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Introduction

In 2011, Robert Kaplan proposed that the 21st century's defining battleground would be located not on the land masses of Europe or Asia but instead on water.[2] Kaplan offered that just as German soil constituted the military front line of the Cold War, the waters of the South China Sea may constitute the military front line of the coming decades.

Six countries—China, Vietnam, The Philippines, Taiwan, Brunei and Malaysia—lay claim in whole or part to territory in the South China Sea. However, it is the relationships and actions of the two major powers in the region—China and the US—which will determine if Kaplan's forecast bears true. If it does, the question of whether this future front line will be one of 'cold competition' or 'hot confrontation' deserves close attention.

This article argues that conflict between China and the US is not inevitable during the next decade. To support this proposition, it will first establish the factors that are creating a perception that China is abandoning what has been a 'peaceful rise' strategy, and is changing its approach towards historical disputes centered on the South China Sea.

The article will contend that Beijing's strategy is shifting in response to a confluence of drivers, including increasing nationalism and a perceived threat posed by the US pivot to the Asia-Pacific. Based on this changing dynamic, the article will then examine the potential for conflict between China and the US during the next decade and outline the economic interdependencies and military disparities between the two that might prevent this outcome from being inevitable.[3]

The article will conclude by noting that while conflict is not a given, growing Chinese assertiveness is creating increased friction within the Indo-Pacific region. At the same time, the US is increasing its military presence in the region and enhancing security cooperation with its allies and partners, several of which also lay claim to territory in the South China Sea.[4] While conflict may not be inevitable, this friction has the potential to draw the US and China into a confrontation that neither wants.

Abandoning a 'peaceful rise' strategy?

The South China Sea is regarded as the trade route hub of the industrial revolution of Asia, providing the main artery of transportation for vital energy imports and commodity exports in East Asia.[5] It contains potentially vast resources, including gas and oil reserves, as well as protein-rich seafoods, access to which underlies the current territorial and maritime disputes. China and others in the region have growing energy needs, and technological improvements in recent years have made oil and gas development in offshore locations more feasible. At the same time, growing demand for seafood and the depletion of near-shore fishing areas are driving fishing fleets further from domestic shores.[6]

While nations in the recent past have sought to resolve territorial disputes peacefully, events playing out in the South China Sea may indicate that China is changing its approach to resolving historical disagreements. Beijing continues to emphasise that China's rise as a global power is based on a strategy of peace.[7] However, increasing tensions in the waters of the South China Sea are seen as testing the sincerity of such a claim.[8]

Carlyle Thayer contends that China commenced a behaviour of aggressively asserting its sovereignty rights in the South China Sea as early as 2011, by targeting the commercial operations of oil exploration ships in waters claimed by The Philippines and Vietnam.[9] A more recent example of Beijing's increasing assertiveness was seen in early May 2014, when a Chinese deep-water oil-drilling rig was constructed

some 130 kilometres inside an exclusive economic zone (EEZ) claimed by Vietnam near the Paracel Islands; the rig was escorted by more than 80 armed vessels that, in the course of a confrontation with Vietnamese vessels, fired high-power water cannons and rammed civilian ships.[10]

So why is China changing its approach? When considering this question, it is evident there are a range of factors influencing China's strategy, rather than a deliberate objective on the part of Beijing to move away from a 'peaceful rise' policy. This article now turns to two contributing factors; rising Chinese nationalism and the US rebalance to the Asia-Pacific.

Rising nationalism

Some observers assert that recent actions by China indicate that Beijing is responding to domestic politics and nationalist public opinion, demanding greater respect for China's new higher status.[11] According to this view, powerful and growing nationalistic movements are influencing China's foreign policy, and disputes in the South China Sea are stirring up substantial nationalistic fervour.[12]

Furthermore, it is argued that a new generation of Chinese leadership, under President Xi Jinping, is supporting this revival of nationalism. Since taking power at the Chinese Communist Party's National Congress in March 2013, the incoming politburo has demonstrated a strong desire to exert more control over existing territorial disputes—and is regarded as being more confident than its predecessors in taking a tougher stance towards China's neighbours.[13] Robert Haddick asserts that China's leaders may see internal political rewards for responding to these nationalist appeals, as well as benefit in using this nationalism for social control if other forms of legitimacy falter.[14]

Responding to the pivot

The other factor in China's changing strategy is that Beijing is responding to Washington's rebalance or pivot to the Asia Pacific.[15] According to this view, the US pivot has caused concern in China because of the strong perception that the US is enhancing its involvement in the South China Sea in order to contain China, with Washington interfering in what Beijing considers to be bilateral issues with other littoral Asian nations.[16] In particular, Beijing would be concerned that the US pivot is emboldening neighbouring counties, particularly The Philippines and Vietnam, to challenge China's maritime and territorial claims.

According to some commentators, deepening US relationships with these nations and the increased US military presence in the region have caused Chinese strategists to argue that China is trapped and vulnerable and must break out of any strategic containment.[17] Others assert that recent Chinese actions in the South China Sea may indicate that Beijing has decided to openly challenge the US pivot and negate the growing influence the US is establishing with China's Northeast and Southeast Asian neighbours; Haddick, for example, argues that China is now pressing previously dormant claims in the South China Sea to protect its growing interests and gain control over its links to key sea lines of communication.[18]

Whatever the reason—and whether or not China is seeking to abandon a 'peaceful rise' strategy—it is clear that China is now in a position to assert its historical claims in the South China Sea in a manner it was unable to do only a few years ago.[19] With growing tension between the US and China, and increased resource competition between nations in the region, mixed with an increasing nationalistic and assertive Chinese leadership, the likelihood of a flashpoint between the US and China may, therefore, seem inevitable—especially if conflict occurred between China and a regional US ally, such as The Philippines, which has a Mutual Defence Treaty with the US.[20]

However, as will now be contended, there are a number of economic interdependencies and military disparities in the US-China relationship that should constrain and mitigate against the risk of conflict between these two superpowers during the next decade.

'The strong do what they can; the weak suffer what they must'

When examining the current US-China power relationship, it is useful to view it through the lens of Thucydides' 'Melian dialogue' in order to consider if China and the US are doing what they can unilaterally or are suffering what they must multilaterally to achieve their national interests.[21] The economic interdependencies between China and its neighbours and the US, as well as the relative military strengths

and partnerships of China and the US suggest that neither can be a unilateral power in the Asia-Pacific region[22]—or at least not in the next decade.

Unlike the Athenians of Thucydides' era, neither is strong enough to dominate the other. China does not yet have the economic and military capabilities to enforce resolution of its territorial claims through conflict with the US.[23] And the US is heavily dependent on Chinese economic growth and does not possess the wealth or military power to single-handedly guarantee peace and security in the region.[24] So for the next decade, these 'weaknesses' should serve to promote stability in the South China Sea and maintain a balance of power in the wider region, rather than resulting in conflict between China and the US.

Economic interdependencies

The economic bonds between the US, China and other nations in East and Southeast Asia are immense, and any serious conflict between them would cripple the global economy, as well as the Chinese and American economies.[25] The economic relations between the US and China have expanded substantially since their signing of a bilateral trade agreement in 1979, with total annual trade between the two rising over the past three decades from US$2 billion to US$562 billion (as of 2013).[26]

China is currently the second-largest trading partner of the US (after Canada), its third-largest export market, and its number one source of imports.[27] China provides a US$300 billion market for US exports and sales and is the largest foreign holder of US Treasury securities (approximately US$1.3 trillion); significantly, China's purchases of US government debt help keep US interest rates low.[28] Overall, almost a tenth of US economic output and employment is directly linked to trade with East Asia.[29] Moreover, US trade with China will continue to grow and, for the foreseeable future, will continue to be a foundation of US economic stability.

While the US economy remains reliant on a growing Chinese economy, China itself is dependent on secure trade flows and imports, essential for a burgeoning economy that has been responsible for bringing many millions of Chinese citizens out of poverty. By 2050, it is expected that China will include 20 per cent of the world's middle-class consumption and will be the world's largest economy.[30] In order to achieve this growth—and meet the energy and technology demands as it moves from an industrial manufacturing economy to a service-oriented economy—China needs to trade with a stable, prosperous Indo-Pacific region.

John Lee from the Centre of International Security Studies at Sydney University agrees that 'China's export sector has been responsible for the creation of hundreds of millions of jobs, and the country still remains deeply dependent on outside technology and know-how'.[31] An example of China's reliance on a stable environment for imports, particularly through the sea lanes of the South China Sea, can be found in its increasing oil imports. China currently imports over 55 per cent of its oil, half from the Middle East, and has become the largest importer of petroleum and other liquid fuels in the world; furthermore, it is anticipated that Chinese oil imports will rise to 65 per cent by 2020.[32]

This snapshot of economic and commercial interdependencies highlights the significance of a stable US-China relationship. That view is reinforced by Bonnie Glaser from the US Center for Defense and Strategic Studies who has argued, in the context of the importance of the US-China relationship to the global economy, that all parties clearly have a major interest in preventing any one of the various disputes in the South China Sea from escalating militarily.[33]

Military disparities

Kaplan asserts that it is a 'harsh, but true reality; capitalist prosperity leads to military acquisition'.[34] True to this view, a consequence of China's rapid economic growth has been a surging investment in its military capabilities. By 2050, it is estimated that China's economy will be worth more than US$25 trillion and its annual defence spending will be over US$1 trillion.[35] Chinese defence spending has quintupled since 2002 and is increasing by double percentage points each year.

China now rates second (to the US) on world rankings in defence expenditure and is rapidly enhancing its military capabilities in both quantity and quality.[36] This includes significant investment in naval modernisation and developing anti-access/area-denial capabilities, able to deter US or other outside

intervention in any conflict in China's littoral space.[37] These capabilities include anti-ship ballistic and cruise missiles, as well as other means, including legal, public opinion, and psychological warfare techniques.[38]

However, while China's current defence expenditure of approximately US$145 billion is more than double any of its neighbours, its expenditure is less than a third that of the US (US$577 billion).[39] Furthermore, the US is increasing its military capability in the Asia-Pacific and, by 2020, plans to have 60 per cent of its navy ships and six of its 11 aircraft carrier battle groups home-ported in the Pacific Ocean.[40]

This suggests that the US is determined to maintain its military superiority, and that China does not yet possess the military power to confront the US in a conventional conflict. John Mearsheimer supports this view, asserting that:

> Present-day China does not possess significant military power; its military forces are inferior to those of the United States. Beijing would be making a huge mistake to pick a fight with the US military nowadays. Contemporary China, in other words, is constrained by the global balance of power, which is clearly stacked in America's favor.[41]

Increased defence spending in the South China Sea region is not just confined to China. In 2012, the aggregate defence spending in Asia superseded Europe for the first time in modern history.[42] Sustained economic growth in the region has enabled larger defence budgets and investment in maritime capabilities, in particular by nations seeking to protect their claims in disputed territories.[43] Vietnam and The Philippines have increased their defence capability in the past decade, with a focus on naval and air platforms, including an investment in anti-access/area-denial capabilities.[44] The military capabilities of these nations have also been bolstered by increased security partnerships and cooperation with the US.[45]

An analysis of relative military power in the South China Sea suggests that China is unlikely to be in a position to successfully challenge the US militarily over the next decade. However, it is generally agreed that China has time on its side and can afford to wait and adopt a more benign foreign policy towards the US while it continues its 'unstoppable' military buildup.[46] For its part, there is nothing to suggest the US is planning to use its current military superiority to confront China, making clear its position that disputes in the South China Sea should be resolved peacefully through collaborative diplomatic processes.[47]

Conclusion

Recent behaviour by China in asserting its territorial and maritime claims in the South China Sea would seem to suggest that Beijing may be abandoning a 'peaceful rise' strategy in favour of using its rapidly developing military power to resolve historical claims. While this behaviour may lead to confrontation with its smaller neighbours, this article has argued that the current economic interdependencies and military disparities between China and the US suggest that conflict in the South China Sea between the two is not inevitable during the next decade.

A likely outcome, as proposed by Carl Thayer, is that China and the US will maintain a relationship of cooperation and friction, whereby 'both countries will work separately to secure their interests through multilateral institutions as well as continuing to engage each other on points of mutual interest'.[48] However, as noted by Rory Medcalf and C. Raja Mohan:

> There is no guarantee that either diplomacy or economic interdependence could stop conflict from beginning or escalating. The 100th anniversary of the outbreak of the First World War is a reminder that seemingly localised security shocks can have unpredictable and devastating consequences.[49]

With an increasing US presence in the Asia-Pacific and enhanced security partnerships with littoral nations in the South China Sea, notably with The Philippines and Vietnam, the US now has a great deal at stake in any confrontation between these nations and China. Failure to respond could undermine US credibility in the region.[50] And while conflict between China and the US serves neither nation's interests, the potential for the US to be drawn into a conflict through its regional partnerships is a real possibility.

This article has argued that it is in the interests of all parties, and indeed the international community, that the waters of the South China Sea not become the military front line of the coming decades. However,

within the context of increasing tension between the US and China over the South China Sea, there are indications that China's rise is unlikely to be a tranquil one.[51]

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Colonel Blain's operational service includes deployments to East Timor and Afghanistan. In January 2010, Colonel Blain deployed the 6 RAR Battle Group as Mentoring Task Force One to Uruzgan province, Afghanistan. His more recent appointments include Director 'Diggerworks' in Defence Materiel Organisation, secondment to the Department of the Prime Minister and Cabinet as Senior Adviser for Defence Policy and Operations, and Director of Military Commitments-Army.

Colonel Blain holds a Bachelor of Arts and a Masters of Management and is a graduate of the Australian Command and Staff Course (2003). He is currently attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College.

Notes

1   This is an edited version of a paper, with the same title, submitted by the author while attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College in 2015. It pre-dates current tensions over land reclamation issues in the South China Sea.

2   Robert Kaplan, 'The South China Sea is the Future of Conflict', *Foreign Policy*, 15 August 2011, available at <http://foreignpolicy.com/2011/08/15/the-south-china-sea-is-the-future-of-conflict/> accessed 8 February 2015.

3   The paper will focus on these two of the four instruments of national power, namely diplomacy, informational, military and economic. The two instruments have been selected as they enable the article to explore the relative military strengths and economic interdependencies of the US and China and how they currently support conflict prevention.

4   Adam Liff and G. John Ikenberry, 'Racing Toward Tragedy? China's Rise, Military Competition in the Asia Pacific, and the Security Dilemma', *International Security*, Vol. 39, No. 2, Fall 2014, p. 83.

5   David Rosenberg, 'Governing the South China Sea: from freedom of the seas to ocean enclosure movements', *Harvard Asia Quarterly*, Vol. XII, No. 3 and 4, Winter 2010, p. 7.

6   Ronald O'Rourke, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: issues for Congress*, Congressional Research Service: Washington DC, 22 October 2012, p. 3.

7   For example, when addressing the Chinese People's Association for Friendship with Foreign Countries on 16 May 2014, President Xi Jinping reinforced this strategy stating there is no 'invasion gene' in the Chinese people's DNA and that China would keep to the path of peace as a rising global power: see Dexter Roberts, '"No Gene for Invasion in Chinese People's Blood", Says Xi, Amid Sino-Vietnam Tensions', *Bloomberg* website, 16 May 2014, available at <http://www.bloomberg.com/bw/articles/2014-05-16/no-gene-for-invasion-in-chinese-people-s-blood-says-xi-amidst-sino-vietnam-tensions> accessed 9 June 2015.

8   Huai-Feng Ren and Fu-Kuo Liu, 'Transitional Security Pattern in the South China Sea and the Involvement of External Parties', *Issues and Studies*, Vol. 49, No. 2, June 2013, p. 103.

9   Carlyle Thayer, 'China-ASEAN and the South China Sea: Chinese Assertiveness and Southeast Asian Responses', Paper for the International Conference on Major and Policy Issues in the South China Sea: European an American perspectives, Academia Sinica: Taipei, October 2011, p. 2.

10   Tung Nguyen, 'Rigged Relations in the South China Sea', East Asia Forum website, 15 May 2014, available at <http://www.eastasiaforum.org/2014/05/15/rigged-relations-in-the-south-china-sea/> accessed 8 February 2015.

11   Aileen Baviera, 'Domestic Interests and Foreign Policy in China and the Philippines: implications for the South China Sea disputes', *Ateneo de Manila University Philippine Studies: Historical and Ethnographic Viewpoints*, Vol. 62, No. 1, 2014, p. 140.

12   Ren and Liu, 'Transitional Security Pattern in the South China Sea and the Involvement of External Parties', p. 138.

13   Irene Chan and Mingjang Li, 'New Chinese Leadership, New Policy in the South China Sea', *Journal of Chinese Political Science*, January 2015, p. 1.

14   Robert Haddick, *Fire on the Water: China, America and the future of the Pacific*, Naval Institute Press: Annapolis, 2014, p. 30

15   Jeffrey Bader, previous principal adviser to President Obama on Asia, defines the the US rebalance as a foreign policy assigning higher priority and political, economic, and security resources to the Asia Pacific region because of its dynamism and opportunities for the US: see Jeffrey A. Bader, 'US Policy: balancing in Asia, and rebalancing to Asia', *Brookings Institute* website, September 2014, available at <http://www.brookings.edu/research/opinions/2014/09/23-us-policy-rebalancing-asia-bader> accessed 1 March 2015.

16   Ralf Emmers, 'The US Rebalancing Strategy: impact on the South China Sea', Australian National University, National Security College Occasional Paper, No. 5, 5 September 2013, p. 44.

17   Wu Shicun and Nong Hong (eds.), *Recent Developments in the South China Sea Dispute: the prospect of a joint development regime*, Routledge: London, 2014, p. 7.

18   Haddick, *Fire on the Water*, p. 2.

19   Liff and Ikenberry, 'Racing Toward Tragedy?', p. 56.

20   The 1951 US-Philippines Mutual Defence treaty states that each Party recognises that an armed attack in the Pacific Area on either of the Parties would be dangerous to its own peace and safety and declares that it would act to meet the common dangers in accordance with its constitutional processes. An armed attack on either of the Parties is deemed to include an armed attack on the metropolitan territory of either of the Parties, or on the island territories under its jurisdiction in the Pacific or on its armed forces, public vessels or aircraft in the Pacific: cited in O'Rourke, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China*, p. 34.

21   Thucydides, *The History of the Peloponnesian War*, translated by B. Jowett, Oxford University Press: London, 1881, pp. 397-407.

22   Benjamin Herscovitch, 'Preserving Peace as China Rises II: preparing for a post-American Asian order', *Foreign Analysis*, No. 10, 1 September 2014, p. 14.

23   John J. Mearsheimer, *The Tragedy of the Great Power Politics*, Norton: New York, 2014, as cited in John Mearsheimer, 'Can China Rise Peacefully', *The National Interest* website, 25 October 2014, p. 4, available at <http://nationalinterest.org/commentary/can-china-rise-peacefully-10204> accessed 9 June 2015.

24   Herscovitch, 'Preserving Peace as China Rises II', p. 1.

25   Haddick, *Fire on the Water*, p. 3.

26   Wayne Morrison, *China-US Trade Issues,* Congressional Research Service: Washington DC, 10 February 2014, summary.

27   Morrison, *China-US Trade Issues*, summary.

28   Morrison, *China-US Trade Issues*, summary.

29   Haddick, *Fire on the Water*, p. 3.

30   Benjamin Herscovitch, 'Preserving Peace as China Rises I', *Foreign Analysis*, No. 9, 13 March 2014, p. 3.

31   John Lee, 'China's Rise and Road to War', *Wall Street Journal*, 5 August 2010.

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34   Robert Kaplan, *Asia's Cauldron: the South China Sea and the end of a stable Pacific*, Random House: New York, 2014, p. 32.

35   Herscovitch, 'Preserving Peace as China Rises II', p. 1.

36   Liff and Ikenberry, 'Racing Toward Tragedy?', p. 56.

37   Ronald O'Rourke, *China Naval Modernization: implications for US Navy Capabilities—Background and Issues for Congress*, Congressional Research Service: Washington DC, 23 December 2014, summary.

38   Dean Cheng, 'The US Needs an Integrated Approach to Counter China's Anti-Access/Area Denial Strategy', Heritage Foundation website, 9 July 2014, available at <http://www.heritage.org/research/reports/2014/07/the-us-needs-an-integrated-approach-to-counter-chinas-anti-accessarea-denial-strategy> accessed 28 February 2015.

39   GlobalFirepower.com, 'Defence Budget by Country', GlobalFirepower website, 17 February 2015, available at <http://www.globalfirepower.com/defense-spending-budget.asp> accessed 28 February 2015.

40   Liff and Ikenberry, 'Racing Toward Tragedy?', p. 83.

41   Mearsheimer, *Can China Rise Peacefully?*, p. 4.

42   See, for example, Myra MacDonald, 'Asia's Defense Spending Overtakes Europe's: IISS', *Reuters*, 14 March 2013.

43   Ely Ratner, 'Rising China and the US Rebalancing to Southeast Asia', Testimony before the US-China Economic and Security Review Commission, Center for a New American Security: Washington DC, 13 March 2014, p. 1.

44   Kaplan, 'The South China Sea is the Future of Conflict', p. 8.

45   Patrick Cronin (ed.), *Cooperation from Strength: the United States, China and the South China Sea*, Center for a New American Security: Washington DC, January 2012, p.18.

46   Kaplan, *Asia's Cauldron*, p. 35.

47   Ren and Liu, 'Transitional Security Pattern in the South China Sea and the Involvement of External Parties', pp. 110-3.

48   Carlyle Thayer, 'Why China and the US won't go to war over the South China Sea', *East Asia Forum*, 13 May 2013.

49   Rory Medcalf and C. Raja Rohan, *Responding to Indo-Pacific Rivalry: Australia, India and middle power coalitions*, Lowy Institute: Sydney, August 2014, p. 4, available at <http://www.lowyinstitute.org/files/responding_to_indo-pacific_rivalry_0.pdf> accessed 9 June 2015.

50   Glaser, 'Armed Clash in the South China Sea', p. 3.

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Conceptualising 'Defence of Australia' in the 21st Century [1]

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Introduction

The term 'Defence of Australia' *should* represent the broad strategic concept of defending Australia against external threats—as a nation state within a rules-based international order. However, since the 1970s, the term has also been synonymous with an operational doctrine aimed at achieving the self-reliant defence of continental Australia 'without relying on the combat forces of allies'.[2] This narrower interpretation of 'Defence of Australia' aimed to focus the ADF's mission and force structure around the core task of defending continental Australia; it also moved away from the previous policy of expeditionary 'forward defence' that had prevailed since the Second World War, which included military contributions to regional collective security arrangements in Southeast Asia.[3]

Towards the turn of the 21st century, however, the strategic environment saw an increase in global military interventions that included Australia conducting multiple expeditionary deployments. Consequently, Defence policy-makers were required to make further compromises as to whether the ADF should be primarily structured for the 'self-reliant continental defence' or 'expeditionary forward defence' of Australia. Thus after 40 years of evolving Australian defence policy, there remains validity to Thomas Millar's 1971 observation that 'there is a tendency to polarise policies between 'forward defence' and 'fortress Australia''.[4]

This article argues that the 'Defence of Australia' concept should return to its broader strategic origins by conceptualising the term as representing a spectrum of defence policy options that range between 'self-reliant continental defence' and 'expeditionary forward defence'. It identifies four enduring factors that influence Australia's defence policy settings within this spectrum of policy options. These include protecting Australia's sovereignty; the impact of Australia's geography; the limitations of Australia's resourcing capacity for 'self-reliance'; and the effects of the prevailing strategic environment on defence policy options.

Discussing these four factors will both demonstrate how they influenced evolving conceptions of 'Defence of Australia' throughout Australia's history, and how they will continue to shape Australia's defence policy settings into the future. The proposed concept for a broader interpretation of 'Defence of Australia' as a spectrum of policy options ranging between 'self-reliant continental defence' and 'expeditionary forward defence' is illustrated at Figure 1.

Figure 1: Conceptualising 'Defence of Australia' as a spectrum of policy options[5]

The notion of sovereignty

When considering the fundamental principles of 'Defence of Australia', it is essential to begin with the notion of sovereignty. The ability to protect and defend sovereignty is a core function for any government. Sovereignty underpins the international order whereby the 1945 Charter of the UN underwrites international law. It also represents equality among nation states and the 'territorial integrity or political independence of any state'.[6]

Importantly, Australia has 'the inherent right of individual or collective self-defence if an armed attack occurs'.[7] However, it was not until the 1987 *Defence of Australia* White Paper that sovereignty received befitting treatment with regular references to protecting Australia's sovereignty, suggesting that Australia's notion of sovereignty in relation to 'Defence of Australia' appears to have been underdeveloped until the late 1980s.[8]

The relationship between sovereignty and evolving concepts of 'Defence of Australia' can be traced to Australia's origins as a British colony. Prior to Federation in 1901, the defence of Australia's colonies remained under the purview of the British Empire. Australia first moved towards assuming sovereign control of its own defence with the *Commonwealth of Australia Constitution Act 1900*. The Constitution empowered Parliament to make laws regarding 'the naval and military defence of the Commonwealth' and that 'the Commonwealth shall protect every State against invasion'.[9] The *Defence Act 1903* then formally established the Defence Force to 'protect Commonwealth interests' both domestically and offshore,[10] effectively demonstrating that Australia had progressed both its own sense of sovereignty under the Commonwealth while developing the mechanisms to defend it.

The relationship between sovereignty and 'Defence of Australia' did not fully evolve until after the Second World War. Stephan Frühling highlights that Australia's 'independence from Britain was a century-long process'.[11] Prior to World War 2, Australian forces deployed offshore to support British Imperial defence. Australians still felt equally British, where threats to the Empire were threats to Australia. Not until World War 2 was there a 'pronounced and consistent … effort by Australian governments to see Australian forces employed in a way that reflected the priority of strategic objectives as seen from Canberra'.[12]

This shift was evidenced in 1941 when Australia demanded that units of the Second Australian Imperial Force be returned from the Middle East to defend the Australian homeland.[13] In the years that followed, Australia increasingly made its own decisions about its defence policies, including the political costs and benefits of military contributions such as to Korea, Malaya and Vietnam.[14] However, Australia was also forced to assume responsibility for its own defence in the late 1960s. British forces had withdrawn 'East of the Suez', while the 'Nixon Doctrine' called for America's allies to accept greater responsibility for their own defence.[15] By the late 1970s, Australian defence policy was increasingly 'self-reliant' and reflected a stronger nexus between sovereignty and 'Defence of Australia'.

The final piece connecting Australia's sense of sovereignty to its defence, however, was the maturing sense of national identity. Not only was the Australian government 'obligated to develop a self-reliant defence' but the Australian public now demanded it.[16] The 1987 *Defence of Australia* White Paper captured this fact, stating that 'Australians have a right to expect that their nation is able to defend itself…. That is at the core of nationhood, and has long been an Australian aspiration'.[17] This sense of nationhood and sovereignty, which had evolved as a central tenet of Australian defence policy, remains enduring both today and into the future.

Australia's geography

Next to sovereignty, Australia's unique geography is another enduring factor influencing concepts of 'Defence of Australia.' As the world's only island continent, defending Australia's sovereignty and territorial integrity seems an impossible task. Although rich in resources, Australia is sparsely populated and has jurisdictions covering over 10 per cent of the Earth's surface. Australia's prosperity is correspondingly reliant on a global, sea-based trading system whereby security of sea lines of communication is essential.

It can be argued, therefore, that Australia's geography presents vulnerabilities to its defence due the expansive scope of national interests and obligations. However, Australia's relative isolation and maritime geography also provide strengths. Apart from the Japanese threat during World War 2, defence policy documents have consistently assessed that no country has the capability or intent to undertake a sustained invasion of Australia.[18]

Importantly, such a threat could be expected to take sufficient time to develop that forewarning is likely. Rather, small-scale low-level raids and attacks against Australia's territory have historically been assessed as the more credible threat.[19] Accordingly, Australian defence policy has generally assessed that Australia's unique geography presents vulnerabilities to its broader national interests such as economy and trade, while also providing strengths in its direct defence against invasion.

It is noteworthy that perceptions on exploiting Australia's geography for its defence have been shaped by two key examples. Firstly, Australia successfully exploited the archipelagic nature of its northern approaches during the Second World War to both halt the Japanese advance south and to liberate New Guinea in 1943. A joint allied maritime strategy was employed to isolate and defeat Japanese forces through a series of sequenced amphibious operations—albeit under US command.[20] Conversely, the Japanese aerial bombings against Darwin and midget submarine attacks in Sydney also demonstrated that an impenetrable defence of Australia was likely an impossible task.

Secondly, analysis during the period of 'Confrontation' with Indonesia concluded that interdiction of hostile forces within Australia's approaches provided the best defence against any lodgement of forces on the Australian mainland.[21] These two experiences demonstrated utility in employing maritime strategy to exploit Australia's unique geography, hence the prevailing requirement for naval and air capabilities to defend the 'sea-air gap', a feature of Australian defence policy that endures today.

The broader debate, however, remained as to what defence policy settings best leveraged Australia's geostrategic strengths. Unfortunately, this generally induced a binary choice between 'expeditionary forward defence' and 'self-reliant continental defence'.[22] After the experience of World War 2, it is unsurprising that Australia adopted a 'forward defence' policy. The policy exploited regional collective security treaties and the stabilising presence of the US as an allied nuclear power. As such, Australia contributed military forces with a focus on keeping both the US and UK regionally engaged. However, the 'forward defence' policy was no longer tenable once those countries reduced their regional commitments in the late 1960s, forcing Australia to maximise its capacity to defend itself unaided.[23]

To improve 'self-reliance', Australia prioritised its ability to defend the northern approaches without allied assistance. This evolved into a strategy of 'defence-in-depth' that was later captured in the 1987 *Defence of Australia* White Paper.[24] Frühling highlights that 'defence-in-depth' underpinned Australia's newfound 'self-reliance' in defending itself. It included a focus on naval and air capabilities to defend the 'sea-air' gap and provide strike capabilities against regional enemy bases. Army units were also moved to Darwin along with the construction of a 'bare air base network across the north' and early warning radar capabilities.[25]

It is evident then that as Australia sought increased 'self-reliance' in its defence, the importance of leveraging Australia's geostrategic advantages likewise increased in importance. Geography remains an enduring influence on conceptions of 'Defence of Australia' and will undoubtedly continue to do so into the future.

Australia's limited resourcing capacity

Australia's unique geography and small population contribute to the third enduring factor influencing conceptions of 'Defence of Australia—Australia's limited resourcing capacity for 'self-reliance'. Put simply, Australia lacks the resources to *autonomously* develop and maintain an ADF capable of independently defending the Australian continent and its territories, while also protecting its national interests further afield.[26]

This fact further exacerbates policy debate regarding a binary choice between 'expeditionary forward defence' and 'self-reliant continental defence'. Notwithstanding, two enduring policy considerations have emerged that continue to shape contemporary defence policy settings regarding resourcing. First is that

Australia's defence is underwritten by major power alliances. Second is that the ADF should be primarily structured for the core task of the self-reliant defence of continental Australia. These two issues will now be considered in turn.

Since colonisation, Australia has underwritten its defence through alliances with major Western powers. As outlined earlier, Australia's defence was initially provided by the British Empire whereby Australia contributed forces to wider Imperial defence. However, the fall of Singapore during World War 2 and Britain's need to prioritise the war against Germany ended Australia's reliance on the Empire for its defence. Instead, Australia turned to the US to underwrite its security, including halting the Japanese advance south during World War 2. The US alliance was formalised in 1951 with the ANZUS Treaty, providing Australia extended nuclear deterrence and assurances of US support should Australia be overtly attacked.[27]

However, this did not extend to indirect confrontation as occurred with Indonesia during the 1960s. Notwithstanding, Australia has contributed to 'burden-sharing' with the US since 1951, including Korea, Vietnam, Iraq and Afghanistan. Although some commentators argue that Australia's contributions have been disproportionately small in comparison to US contributions, Australia nevertheless enjoys significant benefits from the US alliance.[28] This includes privileged access to science, technologies and intelligence that provides Australia with significant defence savings. Australia continues to mitigate the resource costs of self-reliance through underwriting its defence with the US alliance, while also enjoying privileged access to advanced technologies not available within Australia.

Australia could not, however, solely rely on its allies to underwrite its defence and so developed concepts of 'self-reliant' defence of Australia from the 1970s. As early as 1972, the McMahon Government observed that 'Australia would be prudent not to rest its security… on the military of a Western ally in Asia'.[29] Consequently, the challenge of resourcing self-reliance forced policy-makers to reconsider perceptions about defending Australia, culminating in the 1987 *Defence of Australia* White Paper.[30]

Three key themes emerged. Firstly, self-reliance required a prioritisation of Australia's vital interests, a challenging task in the absence of a direct threat. This included identifying what required defending rather than simply what to defend against.[31] Hence the concept of a capabilities approach to planning and the ADF's ability to defend continental Australia in the 'sea-air' gap, while maintaining a regional 'technical edge'.[32] Secondly, in the absence of a direct threat, greater emphasis was placed on the concepts of warning, contingency and expansion. This included structuring the 'force-in-being' for credible low-level contingencies and allowing for expansion should a major threat develop.[33]

Finally, structuring the ADF for self-reliant defence of continental Australia would not preclude deploying the ADF beyond the immediate region, thereby still providing the Government with options for military contributions further afield.[34] Australia developed a conceptual framework for 'self-reliant' defence of Australia that maximised the efficient use of its limited resources. Importantly, the premise of structuring the ADF for the continental defence of Australia remains a consistent feature in contemporary defence policy.

The prevailing strategic environment

The final enduring factor influencing conceptions of 'Defence of Australia' is the prevailing strategic environment. Indeed, it is the strategic environment that will shape how notions of sovereignty, Australia's geography, and limitations in resourcing capacity will interact to determine Australian defence policy settings. In short, defence policy is a 'product of its time'.[35] For example, during World War 2, Japanese expansionism presented Australia with its only real experience of a direct threat to sovereignty and territorial integrity.[36]

It is unsurprising then that Australia committed considerable resources to its defence. This included the service of almost one million of its seven million population and a spike in defence expenditure to almost 35 per cent of GDP[37]—an amount more than double that of the First World War and some seven times more than any other period in its history. Since the end of the Cold War, however, defence spending has slipped to an average of under two per cent of GDP.[38] Hence, there is an enduring correlation between Australian perceptions of the strategic environment and defence policy settings, resourcing and force posture.

Pursuing this point, there is further correlation between the prevailing strategic environment and where Australia has positioned itself on the spectrum between 'expeditionary forward defence' and 'self-reliant continental defence'.

After World War 2, for example, Australia adopted the policy of 'forward defence'. This posture was closely linked to the prevailing strategic environment that saw the emergence of the Cold War, the rise of Chinese communism and communist expansionism, the decolonisation of Southeast Asian nations, and the gradual contraction of the British Empire. As such, Australia's 'forward defence' posture aimed to keep the US and UK regionally engaged in regional collective security treaties, else Australia faced being isolated in a potentially-hostile strategic environment.[39] It can be argued, therefore, that the 'forward defence' policy was a product of the post-World War 2 strategic environment.

Conversely, the narrower interpretation of self-reliant defence of continental Australia gained traction as a result of the post-Vietnam strategic environment. By the mid-1970s, the British had mostly withdrawn 'East of the Suez', and US failures in Vietnam exacerbated US disengagement from the region initiated under the 'Nixon Doctrine'. However, a *détente* had emerged between the US and Soviets, and communist expansionism did not prevail despite the failures of Vietnam.

By the late 1970s, Australia's strategic environment was otherwise benign. Combined with domestic Australian perceptions regarding failures in Vietnam, an adversity to expeditionary deployments contributed to the recalling of most Australian forces forward deployed. This saw the end of the era of 'forward defence', and Australia entered what has been narrowly termed the 'defence of Australia' era due to the prevailing strategic environment post-Vietnam.

The most recent shift in the strategic environment that continues to shape contemporary conceptions of 'Defence of Australia' has been the post-Cold War era. Despite the 1987 *Defence of Australia* White Paper prioritising 'continental defence', Australia instead entered a period that saw over two decades of regular expeditionary deployments in support of regional and global military interventions. These included deployments to Fiji, the Persian Gulf, Bougainville, Rwanda, Somalia, East Timor, the Solomon Islands, Iraq and Afghanistan.

This growth in expeditionary operations was in part a response to the 1989 end of the Cold War, which left the US as the unipolar world power but also saw a spike in intra-state conflicts and increased global willingness for security intervention.[40] Australia's own region experienced instability, culminating in 1999 with Australia leading an intervention in East Timor (INTERFET). INTERFET was a 'notable success that gained Australia regional and global recognition'.[41] It also preceded regional stability becoming a core task of the ADF.[42] Thus the post-Cold War strategic environment challenged conceptions of both 'expeditionary forward defence' and 'self-reliant continental defence', whereby the ADF was increasingly expected to undertake both tasks.

The contemporary challenge facing conceptions of 'Defence of Australia' then is the ability to provide an 'expeditionary forward defence' capability while also prioritising a force structure founded on 'self-reliant continental defence'. The 2000 Defence White Paper attempted to address this challenge through further harmonising the two conflicting concepts into somewhat of a hybrid policy framework. The concept defines Australia's defence to reflect five geographical priorities, commonly referred to as the 'concentric circles'.[43]

These priorities include defending Australia and its approaches; security within the immediate neighbourhood; security of Southeast Asia; stability in the wider Asia-Pacific; and global security. The framework aims to 'see the ADF evolve into a flexible instrument designed to achieve a wide range of different functions beyond the defence of Australia'.[44] Frühling also suggests it represents 'the current bipartisan orthodoxy of Australian defence policy'.[45] The framework offers both a practical and acceptable compromise between 'self-reliant continental defence' and 'expeditionary forward defence' and represents an important evolution in contemporary conceptions of 'Defence of Australia'.

Conclusion

The analysis in this article has identified four enduring factors that determine how the term 'Defence of Australia' has been and will continue to be conceived. First is the notion of sovereignty. The Australian

government is obligated to provide for Australia's defence and the population has a right to expect it, so the requirement to defend Australia's sovereignty will continue to prioritise sovereign defence as an enduring core task of the ADF.

Secondly, Australia's unique geography is a constant in shaping Australia's defence policy options, whereby leveraging the geostrategic advantages of Australia's northern approaches will continue to shape the capabilities and posture required for Australia's defence. Thirdly, Australia lacks the resources for autonomous self-reliance. Hence, the requirement to underwrite Australia's security with major allies will continue to be critical in mitigating Australia's limited resource capacity.

Finally, the prevailing strategic environment remains the ultimate determinant as to where Australia positions its defence policy within the spectrum between 'expeditionary forward defence' and 'self-reliant continental defence'. In the absence of a direct threat, the ability to protect national interests further afield seems prudent. However, there is also little doubt that in the face of a direct threat Australia would prioritise continental defence above all else, as occurred in World War 2.

It can be concluded then that after a century of evolving Australian defence policy, the term 'Defence of Australia' continues to oscillate between the two distinct interpretations that Millar identified in 1971. At one end of the spectrum is the broader interpretation of 'expeditionary forward defence', whereby Australia's broad national interests are defended well offshore, generally in support of a larger allied force. At the other is the narrower interpretation of 'self-reliant continental defence', focused on structuring the ADF for independent continental defence of Australia while still providing options to government for military contributions further afield.

However, changes in the strategic environment over recent decades have increasingly found Australian governments wanting greater flexibility to achieve both, leading to greater compromise between the two seemingly binary policy options. It is for this reason that the term 'Defence of Australia' should return to its broader strategic origins by conceptualising the term as representing a *spectrum* of defence policy options that range between 'self-reliant continental defence' and 'expeditionary forward defence'.

In doing so, the term 'Defence of Australia' will better reflect the natural oscillation between forward and continental defence that will ultimately be determined by the prevailing strategic environment in the 21st century.

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Notes

1.   This is an edited version of a paper, with the same title, submitted by the author while attending the Australian Command and Staff College in 2014.

2.   See, for example, Peter J. Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy,' *Naval War College Review*, Issue 76, No. 4, 2014, p. 26; Hugh White, 'Four Decades of the Defence of Australia: reflection on Australian defence policy over the past 40 years', in Ron Huisken and Merideth Thatcher (eds.), *History as Policy: framing the debate on the future of Australia's defence force*, ANU E Press: Canberra, 2007, p. 163; Ron Huisken, 'Introduction', in Huisken and Thatcher, *History as Policy*, p. 1; Paul Dibb, 'The Self-Reliant Defence of Australia: the history of an idea', in Huisken and Thatcher, *History as Policy*, p. 11; Richard Brabin-Smith, *The Heartland of Australia's Defence Policies,* Canberra Strategic and Defence Studies Centre, ANU: Canberra, 2005, p. 3; Alan Stephens, *Dien Bien Phu, and the Defence of Australia*, Strategic and Defence Studies Centre, ANU: Canberra, 2007, p. 16.

3.   White, 'Four Decades of the Defence of Australia', p. 614; Dibb, 'The Self-Reliant Defence of Australia', p. 11; Stephens, *Dien Bien Phu, and the Defence of Australia*, p. 16.

4.   T.B. Millar, 'Trends in Australian Defence Policy', *Journal of Southeast Asian Studies*, Issue 2, No. 1, 1971, p. 52.

5.   Figure 1 conceptualised and arranged by the author. Background map sourced from Australia Defence Association at <http://ada.asn.au/assets/images/maps/Australia-OrthographicProjection-small.png> accessed 15 May 2015.

6.   UN, *Charter of the United Nations*, accessed October 4, 2014. Chapter 1, Articles 2(1) and 2(4), available at <http://www.un.org/en/documents/charter/> accessed 15 May 2015.

7.   UN, *Charter of the United Nations*, Chapter 7, Article 51.

8.   Commonwealth of Australia, *The Defence of Australia 1987*, Department of Defence: Canberra, March 1987, paragraphs 1.5, 1.7, 1.10, 1.34, 2.11, 2.43 and 2.50. There is no mention of sovereignty in the Strategic Basis series of Australian defence policy documents between 1947 and 1973, and only vague references within the 1976 papers.

9.   Commonwealth of Australia, *Australia's Constitution*, Australian Government Solicitor and Parliamentary Education Office: Canberra, 2006, Sections 51(vi) and 119.

10.   Commonwealth of Australia, *Defence Act, 1903*, Section 51, available at <http://www.comlaw.gov.au/Details/C2014C00592/Html/Text#_Toc395792633> accessed 13 October 2014.

11.   Stephan Frühling, 'Australian Strategy and Strategic Policy', in Peter J. Dean, Stephan Frühling and Brendan Taylor (eds.), *Australia's Defence: towards a new era?*, Melbourne University Press: Melbourne, 2014, p. 166.

12.   Frühling, 'Australian Strategy and Strategic Policy', pp. 166-7.

13.   Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 24; Frühling, 'Australian Strategy and Strategic Policy', pp. 166-7.

14.   Frühling, 'Australian Strategy and Strategic Policy', pp. 185 and 189; Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 21.

15.   Millar, 'Trends in Australian Defence Policy', p. 49; Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 26; White, 'Four Decades of the Defence of Australia', p. 165; Dibb, 'The Self-Reliant Defence of Australia', pp. 12-3; Brabin-Smith, *The Heartland of Australia's Defence Policies*, p. 2; Frühling, 'Australian Strategy and Strategic Policy', p. 193; Breen, *Struggling for Self Reliance*, p. 18.

16.   Breen, *Struggling for Self Reliance*, p. 168.

17.   Commonwealth of Australia, *The Defence of Australia 1987*, paragraph 1.5.

18.   Dibb, 'The Self-Reliant Defence of Australia', p. 13; Stephens, *Dien Bien Phu, and the Defence of Australia*, p. 18; Stephan Frühling (ed.), *A History of Australian Strategic Policy Since 1945*, Department of Defence: Canberra, 2009, pp. 243 and 350; Commonwealth of Australia, *Australian Defence*, Australian Government Printing Service: Canberra, 1976, p. 10; Commonwealth of Australia, *The Defence of Australia 1987*, p. 26; Commonwealth of Australia, *Defence 2000: our future Defence Force*, Department of Defence: Canberra, 2000, p. 23.

19.   Brabin-Smith, *The Heartland of Australia's Defence Policies*, pp. 1 and 5-7; Frühling, 'Australian Strategy and Strategic Policy', p. 193.

20   Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 24; Frühling, 'Australian Strategy and Strategic Policy', p. 185.

21   Stephan Frühling, 'Strategic Basis of Australian Defence Policy', in Frühling, *A History of Australian Strategic Policy since 1945*, pp. 329, 337 and 350.

22   Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 23; Huisken, 'Introduction', p. 1; Dibb, 'The Self-Reliant Defence of Australia', p. 11; Stephens, *Dien Bien Phu, and the Defence of Australia*, pp. 16 and 19.

23   White, 'Four Decades of the Defence of Australia', p. 167.

24   Breen, *Struggling for Self Reliance*, p. 18; Frühling, 'Australian Strategy and Strategic Policy', p. 194.

25   Frühling, 'Australian Strategy and Strategic Policy', p. 194.

26   White, 'Four Decades of the Defence of Australia', p. 168; Dibb, 'The Self-Reliant Defence of Australia', p. 13; Brabin-Smith, *The Heartland of Australia's Defence Policies*, p. 8; Till, 'Outgoing Australia?', p. 3.

27   Breen, *Struggling for Self Reliance*, p. 17; Frühling, 'Australian Strategy and Strategic Policy', p. 192.

28   Breen, *Struggling for Self Reliance*, p. 166; Mark Thomson, 'Funding Australian Defence', in Peter J. Dean, Stephan Frühling and Brendan Taylor (eds.), *Australia's Defence: towards a new era?*, Melbourne University Press: Melbourne, 2014, p. 269; Frühling, 'Australian Strategy and Strategic Policy', p. 191.

29   White, 'Four Decades of the Defence of Australia', p. 165.

30   Dibb, 'The Self-Reliant Defence of Australia', pp. 11 and 16; White, 'Four Decades of the Defence of Australia', p. 168.

31   Stephens, *Dien Bien Phu, and the Defence of Australia*, p. 18; White, 'Four Decades of the Defence of Australia', p. 170.

32   Dibb, 'The Self-Reliant Defence of Australia', p. 19.

33   Brabin-Smith, *The Heartland of Australia's Defence Policies*, pp. 1, 5-6 and 14.; Dibb, 'The Self-Reliant Defence of Australia', p. 15.

34   White, 'Four Decades of the Defence of Australia', pp. 166 and 170; Commonwealth of Australia, *The Defence of Australia 1987*, paragraph 1.43; Huisken, 'Introduction', p. 3; Dibb, 'The Self-Reliant Defence of Australia', p. 15; Brabin-Smith, *The Heartland of Australia's Defence Policies*, p. 10; Stephens, *Dien Bien Phu, and the Defence of Australia*, p. 18.

35   Frühling, 'Australian Strategy and Strategic Policy', p. 196; Kim Beazley, 'White Paper Then and Now: returning to self-reliance as a Labor leit-motif', *Security Challenges*, Issue 5, No. 4, 2009, p. 74.

36   Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 24; Robert O'Neill, 'Preparing to Face Our Next Enemy', The Centre of Gravity Series, Paper 9, Strategic and Defence Studies Centre, ANU: Canberra, 2013, p. 3.

37   Thomson, 'Funding Australian Defence', p. 258.

38   Thomson, 'Funding Australian Defence', p. 238.

39   Dean, 'Amphibious Operations and the Evolution of Australia Defence Policy', p. 26; White, 'Four Decades of the Defence of Australia', p. 164; Stephens, *Dien Bien Phu, and the Defence of Australia*, p. 16; Breen, *Struggling for Self Reliance*, p. 17; Frühling, 'Australian Strategy and Strategic Policy', p. 190.

40   White, 'Four Decades of the Defence of Australia', pp. 171-4; Brabin-Smith, *The Heartland of Australia's Defence Policies*, p. 13; Richard Jones, 'Travel without maps: thinking about security after the Cold War', in M. Jane Davis (ed.), *Security Issues in the Post-Cold War World*, Edward Elgar Publishing: Cheltenham, 1996, p. 197.

41   Andrew Carr, 'Australia as a Middle Power', in Dean *et al*, *Australia's Defence*, p. 44.

42   Joanne Wallis, 'Australia and the South Pacific', in Dean *et al*, *Australia's Defence*, p. 147.

43   Frühling, 'Australian Strategy and Strategic Policy', p. 194.

44   White, 'Four Decades of the Defence of Australia', p. 182.

45   Frühling, 'Australian Strategy and Strategic Policy', p. 195.

Japan's Inevitable Shifting Security Framework [1]

Colonel Gavin Duncan, DSC, Australian Army

Introduction

In the aftermath of the Second World War, Japan entrenched a tradition of pacifism in Article 9 of its new Constitution.[2] Since his re-election in 2012, and again in late 2014, much of Prime Minister Shinzo Abe's focus has been on the delivery of 'Abenomics', aiming to revitalise the Japanese economy.[3] However, the Prime Minister's other significant agenda has been the reinterpretation and revision of Japan's Constitution, untouched since 1947, particularly by reviewing the self-imposed ban on collective defence.

This article argues that any reinterpretation of Japan's Constitution, including Article 9, may initially have some adverse though limited impact on Northeast Asian security and that, over the next 10 years, it should ultimately see Japan normalise the use of its national power, including the use of military power for the purposes of national security, within the global security framework.

The article begins by broadly outlining recent Japanese developments in relation to constitutional interpretation. It examines the key drivers for change, focusing primarily on the regional security architecture in Northeast Asia, and then focuses on the key aspects of domestic and regional concerns related to Japan's evolving security framework.[4]

It concludes that notwithstanding some regional concerns, the reinterpretation of Japan's Constitution should allow Japan to better utilise its national power within the global security framework. Moreover, provided it is supported by a domestic mandate, any reinterpretation should contribute to strengthening the regional security architecture of Northeast Asia.

Prime Minister Abe's legislative approach to change

Not long after being first elected to office in 2007, Prime Minister Abe created an 'Advisory Panel on Reconstruction of the Legal Basis of Security' to progress the idea of the need to reinterpret the Constitution.[5] Domestically, however, any reinterpretation of the Constitution is a highly-sensitive issue, with the majority of Japanese sceptical as to the need for change.[6] Accordingly, limited progress occurred during Abe's first term of office.

Since Abe's re-election in 2012, his Liberal Democratic Party (LDP) has been working to progressively reinterpret the Constitution through legislative changes. Based on the recommendations of the Advisory Panel, which had resumed its deliberations following Abe's re-election, Japan's Cabinet in 2013 reinterpreted the Constitution regarding Japan's right to collective self-defence, although it included quite circumscribed conditions for the use of the Japanese Self Defense Force (JSDF).[7] Further legislation to underpin the proposed changes is expected to be progressed in mid 2015.

The key argument that Abe has used as the basis for the LDP's reinterpretation of the Constitution has primarily related to the changing security environment in Northeast Asia, with the key factor being the rise of China.[8] Each of the Japan's recent Defence White Papers has highlighted the unpredictable nature of China's military assertiveness and capability.[9] Moreover, the context of the Chinese-Japanese relationship has been changing significantly since the mid-1990s, with continued Chinese economic growth and increased assertiveness in regional diplomacy and force posture clearly impacting the Japanese calculus.

Japanese defence officials have been closely monitoring China's efforts to build a 'blue-water' navy and increasingly frequent Chinese naval movements in regional waters. Additionally, the increasing ballistic missile and nuclear weapon capability of North Korea adds to this view of a significantly changed security environment for Japan. Within this changed environment, Abe's Government has signalled that Japanese pacifism may no longer serve Japan's best interests. However, while the regional security calculus is

driving the Japanese Government's view for change, there also remain significant domestic and regional challenges to any change from the pacifist tradition that has served Japan for the last 70 years.

Domestic and regional concerns

Although changes in the international environment, as articulated by the Japanese Government in its *2014 Defense of Japan* White Paper, provide a clear rationale for an altered security posture, Japan's pacifist tradition remains entrenched within its society.[10] Accordingly, it is generally agreed that domestic considerations potentially provide the most significant challenges for Abe's continuing push for reinterpretation and ultimate review of the Constitution.[11]

With laws being passed through the Diet in May 2015, the task of building a national consensus around the decision remains a significant challenge for Abe's political future.[12] Japanese opinion polls indicate that the majority of the public still supports the pacifist framework of the Constitution.[13] Furthermore Abe's LDP has a coalition partner (New Komeito) which is ideologically linked to pacifist beliefs.[14]

Perhaps less controversial, but nonetheless a consideration for Abe, are concerns held by Japan's neighbours, primarily China and South Korea, regarding any potential broadening of Japan's security posture. Both China and South Korea, when appealing to national identity, frequently remind their people—and the rest of Asia—about Japan's actions before and during World War Two. Similarly, Chinese and South Korean commentators, critical of any changes to Japan's security policy and changed force posture, highlight Abe's nationalist agenda on security affairs, and evoke images of a pre-World War Two Japanese mindset. Any such vision of Japan, with a normal military posture and a revisionist view of its history, further deepens mistrust among China and South Korea in particular.[15]

Although Japan has a longstanding domestic tradition of anti-militarism,[16] Abe has successfully managed to push through defence budget increases in 2013 and 2014.[17] Japan's growing confidence in using the military with democratic legitimacy to protect its interests and to contribute to international security, as a natural evolution of Japan's security posture, is not always shared by its neighbours, particularly China. China, for example, has been critical of Japan's 2013 *National Defense Program Guidelines*, which have resulted in a new defence orientation known as 'Dynamic Joint Defense Force', including a southwest shift of the JSDF force posture to islands closer to China.[18]

Additionally, Japan's release of a 2013 National Security Strategy and actions to bolster US and regional alliances indicate that Japan's previously low-key security profile and pacifist tradition are undergoing changes and institutional reforms of potentially long-term significance. Aside from competition generated by energy security, strategic rivalry between Japan and China is compounded by a clear view, from a Chinese perspective, that Japan and the US are on the same team regarding defence strategies in relation to Taiwan and hedging against China.

This posture is viewed by China as essentially against its core national interests. Chinese populist nationalism, fuelled by sentiments that Japan does not sincerely acknowledge its past aggression and atrocities, makes it that much harder to manage longstanding territorial disputes, such as tensions over the Senkaku/Diaoyu Islands.[19] But ironically, it is also China's lack of acknowledgement of Japan's pacifist tradition over the last 70 years that is fuelling an argument by the Japanese Government for normalisation of its security framework as a responsible, international stakeholder.[20]

The idea of an enhanced strategic posture for Japan as part of a broader US security strategy has also been greeted with some anxiety in Seoul, mainly because of the perceived change in the *status quo* that would see South Korea increasingly having to make a choice between the US security alliance and Chinese economic primacy.[21] Similar to China, South Korea has historical grievances with Japan, particularly relating to Japan's occupation of the Korean peninsula between 1910 and 1945, which continue to affect their bilateral relationship.

The normalisation of bilateral relations in 1965, improving trade and investment contacts, and the common threat of North Korea has somewhat tempered these underlying tensions.[22] However, there continues to be elements of mistrust in the relationship between Japan and South Korea. Major tension points include a territorial dispute over maritime borders and controversy over compensation for the war-time abuse of Korean women by the Japanese army.[23]

Another source of tension is the negative view of Sino-Japan rivalry and its potential impact on South Korea's national interest, with a number of commentators asserting that Japan's military build-up is primarily aimed at China rather than the oft-used justification of North Korea's increasing nuclear threat.[24] Heightened Sino-Japan tensions are not in South Korea's interest—and South Korea could be expected to oppose any constitutional reinterpretation by Japan that impacted the *status quo* of Sino-Japan security relations.[25]

Chinese and South Korean sensitivities with Japan over historical issues remain central to the resolution of other territorial issues. Prime Minister Abe will need to manage these concerns astutely. However, with continued strong economic growth by Japan, and notwithstanding regional concerns by China and South Korea, Abe is expected to continue making incremental reforms to Japan's security apparatus and JSDF force posture that will normalise the use of its national power, including military power, within the global security framework.

The inevitability of incremental constitutional change

The July 2014 decision by Japan's Cabinet to permit the JSDF to participate in collective self-defence activities marks an important change in a longstanding Japanese pacifist tradition.[26] These legislative changes, if affirmed by the Diet, will provide greater flexibility to the Japanese Government in its employment of the JSDF. Although strict caveats apply to the legislative changes being proposed, they also imply a growing gap between what is stated in Article 9 and the declared use of the JSDF.

The employment of the JSDF in Afghanistan, Iraq and a number of UN missions over the last 20 years, alongside some increasingly 'offensive' defence capability purchases, indicates a growing confidence and increasing flexibility in the operational employment of the JSDF. The strict caveats that remain in place for the employment of the JSDF, however, remain rooted within Japan's pacifist security framework contained within Article 9 of the Constitution. Chinese and South Korean sensitivities are sparked not so much by these legislative changes but from specific incidents where nationalist tendencies come to the fore, generally over territorial disputes or the history issue.

In addition to legislative changes, the Japanese Government has also tightened its alliances, not only with the US but also with other partners in the region. Abe has also incrementally normalised Japan's security and defence policy within mainstream government business. This has seen the publication of Japan's 2013 National Security Strategy, numerous iterations of the *National Defense Program Guidelines*, and the normalisation of the *Defense of Japan* white papers within a whole-of-government framework.[27]

The establishment within its Cabinet of the National Security Council of Japan has also seen further government centralisation of security and defence policy.[28] Revised defence policy, as articulated by the 'Dynamic Joint Defense Force' policy and the shift of the JSDF's force posture to islands closer to China, is also indicative of a changing Japanese security posture. Taken collectively, these measures facilitate Abe's preference for a more proactive security policy for Japan, albeit at an incremental pace.[29] This graduated change and incremental pace, however, is also reflective of both domestic and regional concerns about any significant shift in Japan's security posture.

Certainly, Abe has demonstrated a nuanced understanding of the need for a graduated response to any reinterpretation of Japan's Constitution because of strongly-held popular views of a pacifist tradition that has served Japan effectively since World War Two. The sensitive regional relationships with China and South Korea, primarily over maritime territorial issues and longstanding historical grievances, are additional considerations for Abe. In dealing with Northeast Asian sensitivities, Abe's LDP has remained aware of being too pragmatic about past Japanese apologies.

Sensitivities between China, South Korea and Japan are such that minor issues have the potential to generate significant nationalist reaction within these countries. So suppressing any perceived revisionist instincts that would inflame Sino-Japan or South Korean-Japan relationships would ultimately support Abe's domestic agenda.[30] Conversely, any adverse reaction by China or South Korea would likely impact negatively on Japan's economic future and security architecture, in addition to straining the US security alliance with South Korea. Resolving specific issues such as the Senkaku/Diaoyu Islands dispute, as well as mitigating any specific view of a capabilities race between China and Japan, and ensuring a path for

reconciliation over the past between these three countries are all issues to be managed in parallel with a changing Japanese security framework.[31]

Whether Abe continues to evolve policy in line within the existing framework of pacifism or develops security practices with a growing gap in relevance and subsequent discarding of pacifism, remains to be seen. What has worked thus far has been a nuanced approach focused on developing a domestic mandate through continued economic success and legislative changes supporting reinterpretation of the Constitution, as well as continuing reforms in security policies and changes in JSDF force posture. With his re-election in late 2014, and continued success with 'Abenomics', which has strengthened his political support, Abe may ultimately achieve his longer-term proclaimed goal of constitutional revision before the end of his third term.[32]

Conclusion

It has been argued in this article that the continued reinterpretation of Japan's Constitution, including Article 9, will likely have an adverse but limited impact on Northeast Asian security over the next 10 years. Ultimately, it can be expected that Japan will normalise the use of its national power, including military power, within the global security framework.

The article has outlined a number of recent developments and key drivers in relation to Japan's constitutional reinterpretation. And it has argued that although regional concerns remain considerable and particularly sensitive to any perceived revisionist Japanese view of World War Two, domestic opposition to any change in Japan's pacifist tradition is potentially the more significant issue for Prime Minister Abe.

The article concludes that Japan will need to carefully manage existing and potential areas of friction with China and South Korea, regardless of any future developments in constitutional reinterpretation. However, further reinterpretation, and ultimately some revision of Japan's Constitution, should allow Japan to better utilise its national power within the global security framework. To that end, it can be expected that Abe will engineer the assumption of Japan's place as a fully-contributing nation in the international order, through his long-term goal of constitutional revision, without undue long term impact on the existing Northeast Asian security architecture.

Colonel Gavin Duncan graduated from the Royal Military College, Duntroon in 1990. His early postings included 2nd/3rd Field Engineer Regiment/2nd Combat Engineer Regiment, 1st Recruit Training Battalion, the Special Air Service Regiment, and 4th Battalion, The Royal Australian Regiment (Commando). He was appointed Commanding Officer of the 1st Commando Regiment in January 2007, and Commanding Officer of 4th Battalion, The Royal Australian Regiment (Commando) in July 2008. He subsequently served in Special Operations Command, and as Chief of Staff of the 1st Division/Deployable Joint Force Headquarters.

Colonel Duncan has deployed on numerous operations in the South Pacific and the Middle East, including as the Officer Commanding the Special Operations commitment to East Timor, on Operation FALCONER/CATALYST in Iraq, and multiple tours on Operation SLIPPER in Afghanistan. In 2014, he deployed as Commander Joint Task Force 659 for Operation HAWICK, the humanitarian assistance mission to recover victims from the MH-17 incident in the Ukraine.

Colonel Duncan holds a Bachelor of Science from the University of NSW, a Master of Management in Defence Studies from the University of Canberra, and a Master of Strategic Affairs from the Australian National University. He is currently attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College.

Notes

[1] This is an edited version of an essay, with the same title, submitted by the author while attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College in 2015.

[2] Prime Minister of Japan and His Cabinet, *The Constitution of Japan*, 3 November 1946, available at <http://japan.kantei.go.jp/constitution_and_government_of_japan/constitution_e.html> accessed 15 February 2015.

[3] Mike M. Mochizuki and Samuel Parkinson Porter, 'Japan under Abe: toward moderation or nationalism?', *The Washington Quarterly*, Vol. 36, No. 4, p. 27.

[4] For the purposes of this paper, Northeast Asia is limited to China, the Koreas and Japan (whereas some definitions include Russia, Taiwan and Mongolia).

[5] Advisory Panel on Reconstruction of the Legal Basis of Security, 'Report of the Advisory Panel on Reconstruction of the Legal Basis of Security', 15 May 2014, available at <http://www.kantei.go.jp/jp/singi/anzenhosyou2/dai7/houkoku_en.pdf> accessed 5 March 2015.

[6] Linus Hagstrom, 'The Democratic Party of Japan's security policy and Japanese politics of constitutional revision: a cloud over Article 9?', *Australian Journal of International Affairs*, Vol. 64, No. 5, p. 511.

[7] Mochizuki and Porter, 'Japan under Abe', p. 31. The three conditions that have to be met for the use of force include: when there is an imminent and illegitimate act of aggression against Japan; when there is no appropriate means to deal with such aggression other than by resorting to the right of collective self-defence; and when the use of armed force is confined to the minimum necessary level.

[8] Hitoshi Tanaka and Adam P. Liff, 'Japan's Foreign Policy and East Asian Regionalism', Council on Foreign Relations: New York, 9 December 2009, p. 7.

[9] Ministry of Defense, *Defense of Japan 2014 White Paper,* Ministry of Defense: Tokyo, 2014, pp. 2-4.

[10] Ministry of Defense, *Defense of Japan 2014 White Paper*, pp. 2-4.

[11] See, for example, Andrew L. Oros, 'International and domestic challenges to Japan's post-war security identity, "norm constructivism", and Japan's new "proactive pacifism"', *The Pacific Review*, Vol. 28, No. 1, p. 145.

[12] Malcolm Cook and Thomas S. Wilkins, 'Aligned Allies: the Australia-Japan strategic partnership', The Tokyo Foundation website, December 2014 available at <http://www.tokyofoundation.org/en/articles/2014/aligned-allies> accessed 4 March 2015.

[13] Cameron Stewart, 'Possible subs snub seen as a blow to Japan's shifting military posture', *The Australian*, 14-15 February 2015.

[14] Mochizuki and Porter, 'Japan under Abe*',* p. 29.

[15] Teng Jianqun, 'Chinese Perspectives on Japan's Defense Transparency', Policy Brief 2012, Institute of Global Conflict and Cooperation, University of California: Berkeley, 6 March 2012, available at <https://escholarship.org/uc/item/1149q1kt> accessed 20 June 2015.

[16] Oros, 'International and domestic challenges to Japan's post-war security identity, "norm constructivism", and Japan's new "proactive pacifism"', p. 140.

[17] Adam P. Liff and G. John Ikenberry, 'Racing Towards Tragedy?', *International Security*, Vol. 39, No. 2, p. 73.

[18] Liff and Ikenberry, 'Racing Towards Tragedy?', p. 73.

[19] Jianqun, 'Chinese Perspectives on Japan's Defense Transparency'.

[20] William Choong, 'Japan's New Politics', *Survival: Global Politics and Strategy*, Vol. 55, No. 3, p. 50.

[21] Jae Ho Chung, 'China's Ascendancy and the Korean Peninsula: from interest re-evaluation to strategic realignment? in David Shambaugh (ed.), *Power Shift: China and Asia's new dynamics,* University of California Press: Berkeley, 2005, p. 151.

[22] Scott Snyder, *China's Rise and the Two Koreas – Politics, Economics, Security*, Lynne Rienner: Boulder, 2009, p. 163.

[23] Jane's, *Jane's Sentinel Security Assessment – China and Northeast Asia*, IHS Global Limited: London, 26 January 2015.

24   See, for example, Isabel Reynolds, 'China Overtakes North Korea as Japan's Top Security Concern', Bloomberg Business website, 8 March 2015, available at <http://www.bloomberg.com/news/articles/2015-03-08/china-overtakes-north-korea-as-japan-s-top-security-concern> accessed 19 June 2015.

25   Snyder, *China's Rise and the Two Koreas – Politics, Economics, Security*, p. 196.

26   Oros, 'International and domestic challenges to Japan's post-war security identity, "norm constructivism", and Japan's new "proactive pacifism"', p. 153.

27   Jithin S. George, 'Defence of Japan: decision-makers and trends', *Maritime Affairs: Journal of the Maritime Foundation of India*, Vol. 8, No. 2, Winter 2012, p. 20.

28   Ministry of Foreign Affairs of Japan, 'Japan's Security Policy', Ministry of Foreign Affairs of Japan website, 16 June 2015, available at <http://www.mofa.go.jp/policy/security/> accessed 19 June 2015.

29   Oros, 'International and domestic challenges to Japan's post-war security identity, "norm constructivism", and Japan's new "proactive pacifism"', p. 153.

30   Alexander Nicoll, 'Beyond Abenomics: Japan's grand strategy, strategic comments', *The International Institute for Strategic Studies*, Vol. 19, No. 4, p. 2.

31   Richard C. Bush, *The Perils of Proximity: China-Japan security relations*, Brookings Institution Press: Washington DC, 2010, pp. 278-302.

32   Oros, 'International and domestic challenges to Japan's post-war security identity, "norm constructivism", and Japan's new "proactive pacifism"', p. 158.

BOOK REVIEWS

Bearing Witness: the remarkable life of Charles Bean, Australia's greatest war correspondent

Peter Rees
Allen & Unwin: Sydney, 2015, 568 pages
ISBN: 978-1-7423-7954-8
$32.99
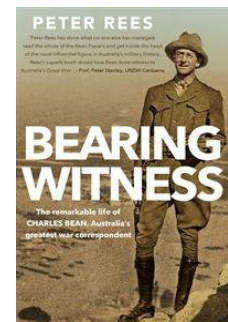
Reviewed by Kristen Alexander

Charles Edwin Woodrow (CEW) Bean, the man who wrote six of the volumes of Australia's *Official History of the War of 1914–1918* and edited the other six, left a significant archive of writings. That archive, however, is so substantial that the casual enquirer could not hope to master even a small portion of it. Peter Rees has delved into the monumental accumulation of records (including 226 volumes of diaries) and mastered it to such an extent that in *Bearing Witness: the remarkable life of Charles Bean, Australia's greatest war correspondent* he is able to get inside his subject's head.

Not only that, Rees, whose career path mirrors Bean's in many ways—he too moved from journalist to history writer—was able to draw on his own considerable experience to explain and interpret Bean's. The result is that the reader feels as if he or she knows the subject intimately in this deeply-researched, well-written and utterly accessible biography.

With so much primary source material relating to Bean's work as a war correspondent and official historian, the temptation would be to focus on that period of his life. It is testament to Rees and his publisher that they agreed not to curtail a discussion of Bean's formative years because in this section the reader discovers the basis of Bean's moral code which informs his writing practice and commitment to accurately bear witness. 'Be truthful', Bean's mother exhorted the six-year old boy. Be 'morally brave'. Be a 'good, charitable man'. By describing the world of Bean's childhood and youth, his family and influences, and his early accomplishments, the reader clearly sees Bean's maturing intellectual honesty, his morality and his dogged pursuit of truthful reportage.

The trajectory of Bean's career as war correspondent and historian is well known. There is no need to discuss it here. What perhaps is less known is the development of the personal philosophies which underpin his writings, especially the *Official History*. Rees discusses Bean's perception of mateship, nationhood, and belief in the goodness of his fellow man. We discover how reporting the Great War, at the same time as gathering material for the future task of writing the official history, created conflicts with the military censors and even his own writing practice.

For instance, criticism was relegated to his war diaries/notebooks ('it made you mad to think of the dull, stupid, cruel bungling that was mismanaging the medical arrangements', for example) and the 'bright side' of the war was the foundation of his published newspaper despatches, which he referred to as 'letters'. Taking only the diaries or despatches as source documents, Bean realised, would lead to a skewed appreciation of his war. 'If ever it [his diary] were used it would have to be used most carefully…. I can't write everything here as well as in my letters'. A useful warning to any historian: look at the entire body of evidence, rather than sources in isolation.

Bean may have edited the criticisms from his despatches and bowed to the strictures of censorship but Rees was not tempted to brush over the negative aspects of the war correspondent's character. Late at night on 25 April 1915, a day that started well before dawn and saw the death of 101 men in the first wave of landings alone, the reader catches a rare glimpse of an insensitive Bean. Noisily constructing his own dugout, he bridled at the complaint of a neighbour, a no doubt exhausted signaller, who could not sleep from the racket Bean was making.

Rees also shows us that, on occasion, Bean failed to live up to his mother's plea to be morally brave. After a raid in June 1916, where members of the 7th Brigade captured soldiers from a Prussian infantry regiment, Bean recorded that the Australians and their prisoners were caught in shellfire. One of the panicked Prussians struggled and could not be subdued. The Australians cut his throat. Two more prisoners 'did not seem to understand what was required of them—at any rate they didn't do instantly what was required of them—and were shot on the spot'. We can well understand why Bean the reporter would not include this incident (a potential war crime?) in the subsequent despatch home but should not Bean the historian have included it in the official history?

For the most part, however, Bean was morally brave in his reporting, struggles with the military, and history writing. Rees is also morally brave because it takes courage to portray all sides of a man who has long been lauded. Lucy Bean would have been just as proud of Rees and this warts-and-all, vices and virtues biography, as she was of her son.

If you want a history of the Gallipoli campaign or the battles on the Western Front, this book is not for you. If you want to discover more of the man who reported those battles and constructed the first detailed history of them, you could do no better than to read *Bearing Witness*. It is a well-rounded, revealing biography of Bean the man, reporter, historian and passionate advocate of Australian nationhood. Recommended.

A Handful of Bullets: how the murder of Archduke Franz Ferdinand still menaces the peace

Harlan K. Ullman
Naval Institute Press: Annapolis, 2014, 226 pages
ISBN: 978-1-6125-1799-5
US$34.95
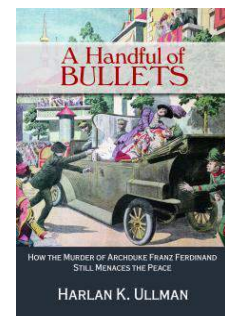
Reviewed by Commander Robert Woodham, Royal Australian Navy

The assassination of Archduke Franz Ferdinand, heir to the Austro-Hungarian thrones, took place in Sarajevo in June 1914, just over a century ago, and precipitated the disaster that was the First World War. A handful of bullets unleashed countless millions. Although the war itself is an obvious cause of enormous political, economic and social changes in Europe and beyond, this book sees the assassination as the fundamental event which prompted those changes. In seeking to learn from history, and avoid future disasters, the author looks for potential bullets which we should be alert to today.

According to Ullman, the Cold War threat of massive destruction has given way to one of massive disruption, as political and economic power diffuses out of the hands of governments, propelled in part by the information revolution. The four horsemen of the apocalypse have also kept pace with the modern world. Their Gen-Y incarnations, now driving cars and wearing hoodies no doubt, are identified by the author as failed and failing governments, economic disaster, radical ideologies and catastrophic climate change.

He further points out that, unfortunately, the power-leaking governments neither notice nor care, since politicians, at least in the West, are obsessed with getting elected, and care little for governing competently once they achieve that goal. This phenomenon has become so dire that we realise, with a shock, that the author includes the US Government in his list of 'failing governments'—but it is hard to argue against his logic.

Although the dramatic assassination scene, portrayed on the book's dust jacket, is an effective metaphor, we need to be wary of joining the dots too directly. At the time, Austria-Hungary was under great internal pressure from social change, exacerbated by its multi-ethnic composition, while further afield the slow

demise of the Ottoman Empire applied its own stresses and strains. But such changes abound today, too. The trick is to determine which bullets are the most important.

The book ponders at length the undermining of state sovereignty over the last century, acknowledging that the question of whether the Westphalian concept of the state remains relevant is not particularly new. Communists of the last century believed that the working class of any given country had more in common with the working-class of another country than with their own ruling class ('workers of the world unite'). Today, there are other unifying beliefs besides political ones, which the book characterises as a potential source of future bullets. One of the new four horsemen is radical and violent ideology.

The Westphalian concept of national self-determination has probably always been ambiguous, and it certainly remains highly topical today. How does one deal with independence movements within states, of which there are many examples around the world? Scottish nationalism has clearly played a significant role in the recent UK general election. The desire for a separate Kurdish state across existing national boundaries is also strong. The conflict in Iraq and Syria offers plenty of imponderables. The extent to which China is a cohesive nation-state is probably much exaggerated. One might also include a contradiction at the heart of the US, namely that the Confederate States were not permitted self-determination. Democracy is all well and good but only if it comes up with the right answer.

Although US-centric, and understandably so, this book is refreshing in the honesty with which it critiques the US system. It stares with confidence in the mirror and recognises the bad as well as the good.

At times, this work presents a bleak picture but there is plenty of sound reasoning to back it up, and solutions are offered too. It is the sort of book that you will think about, and talk about, long after you have turned the final page, and I will definitely be keeping an eye out for those new four horsemen.

South Pacific Cauldron: World War II's great forgotten battlegrounds

Alan Rems
Naval Institute Press: Annapolis, 2014, 242 pages
ISBN: 978-1-61251-471-0
US$30.00
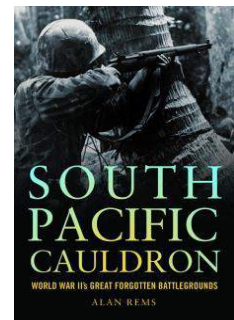
Reviewed by Brigadier Chris Field, CSC, Australian Army

> Australia ... plays a central role in the South Pacific, [and] we will need to continue to be a source of economic, diplomatic and, if necessary, military support.
>
> [After a secure Australia] ... our next most important strategic interest is the security, stability and cohesion of our immediate neighbourhood, which we share with Papua New Guinea, Timor-Leste and South Pacific states.
>
> The ADF's enhanced amphibious capability will provide additional options for cooperation and engagement activities in the South Pacific ... [and] maintaining an enduring joint amphibious presence in the South Pacific.
>
> *Defence White Paper 2013,* pp. 15, 25 and 31

Seventy years after the end of World War 2, Australian policy emphasises the South Pacific's crucial role in Australia's national security. Supporting Australian policy, the ADF's forthcoming enhanced amphibious capability is intended for employment in the South Pacific and the wider region. This employment is initially focused on security, stabilisation, humanitarian assistance and disaster relief tasks. *South Pacific Cauldron* provides members of the ADF with historical context for operations in the South Pacific, including the utility of amphibious operations.

Alan Rems is an American, and *South Pacific Cauldron* is written to inform an American audience which has largely forgotten this campaign. These facts do not detract from the value of this book for ADF readers. Rejecting American parochialism, Rems expansively discusses the contributions of sea, land and air forces from four nations in the 1942-45 South Pacific campaign: Australia, Japan, New Zealand and the US.

South Pacific Cauldron emphasises two significant lessons from these South Pacific operations: the importance of a campaigning plan and the centrality of joint operations to campaign success.

The allied campaign plan, Operation CARTWHEEL, established a clear objective for allied forces: the encirclement of the Japanese bastion at Rabaul. Operation CARTWHEEL's design was finalised in April 1943. In the next 12 months, the allies fought from Guadalcanal and Buna through Woodlark, Kiriwina, Nassau Bay, New Georgia, Nadzab, Lae, Salamaua, the Markham and Ramu Valleys, Finschhafen, the Treasuries, Empress Augusta Bay, Arawe, Cape Gloucester, Saidor, the Green Islands, Emirau and the Admiralties. By March 1944, 'encirclement [of Rabual] was complete ... [and] control of the land, the sea, and the air was [with the allies]'.

For the US, the joint command arrangement was 'not perfect, but it worked'. While unity of command made sense, US Army and US Navy leaders were not prepared to hand over full control to a rival service commander who 'would not understand and support its established doctrines and methods'. Therefore, the US maintained a 'divided command' throughout Operation CARTWHEEL. This meant that Admiral William 'Bull' Halsey exercised tactical command of US Navy forces when working in US Army General Douglas MacArthur's domain under MacArthur's operational direction.

Rems contends that for Japan, 'full cooperation between the two armed services [Navy and Army] proved even more difficult and was far less successful than between the American services'. Although Admiral Mineichi Koga, leading the Japanese navy, and General Hatazo Adachi, leading the Japanese 18th Army, were directed to 'act in concert ... little heed was given to that part of the Imperial directive'.

Subsequently, the Japanese army convinced Tokyo that the defence of New Guinea, shielding the resource-rich Netherlands East Indies and The Philippines, was a greater need than Japanese naval priorities of defending the Solomons and safeguarding Rabaul. With the allies attacking simultaneously through the Solomons and New Guinea, the bifurcated Japanese plan could not halt the inexorable allied advance to isolate Rabaul.

For Australia, command arrangements were sealed in February 1943 when General MacArthur created *Alamo Force* with the US Sixth Army commanded by Lieutenant General Walter Krueger. This decision diminished Australian Army General Thomas Blamey's authority over land forces in the South Pacific. However, the official Australian historian David Dexter observed that 'if separate roles could be found for the Australian and the American Armies, difficulties inseparable from the coordination of forces possessing different organisation and doctrine could be avoided'.

Of note, Rems details the removal of 42 senior Allied and Japanese leaders during the campaign. These removals resulted from incompetence in combat, personal disagreements, reassignments, exhaustion, injury or death. The relentless South Pacific campaign, fought through diverse forbidding terrain, strained and tested leaders and troops along with their tactics, communications, logistics and equipment.

In 242 pages, *South Pacific Cauldron* is divided into 29 chapters, an average of eight pages per chapter. These brief chapters make *South Pacific Cauldron* ideal for ADF leaders to assign as short professional military education readings, especially aboard deployed ships and within busy land and air units.

Finally, the Melanesian geography dominating this campaign is familiar to many ADF members. Rems examines fighting in the Solomon Islands, the eastern half of New Guinea, including Bougainville, and the waters and lands of the Solomon and Bismarck Seas in between. All of these areas are within reach of ADF personnel seeking to conduct battlefield staff rides in support of ongoing professional military education.

The Ottoman Defence against the Anzac Landing
25 April 1915
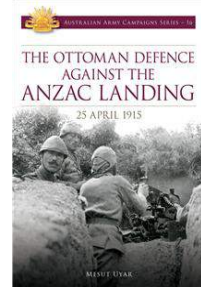
Reviewed by John Donovan

Mesut Uyar, a former Turkish officer, but now Associate Professor of Ottoman History at the University of NSW in Canberra, has presented a clear account of the Ottoman defence on 25 April 1915. He has the advantage sometimes not available to English speakers of being able to read original documents, including those in the old Ottoman script, adding depth to the study.

Professor Uyar starts with a review of reforms to the Ottoman Army after its defeats in the period 1911-13. He notes that the Ottoman forces had the advantage of experience repelling attacks on the Gallipoli Peninsula, including an attempt by the Italian Navy to enter the Dardanelles in April 1912, and preparations for ground defence during the Balkan Wars. Professor Uyar is more critical than is usual in English language sources of the German General Otto Liman von Sanders, head of the German military mission to assist with the reform program. Interestingly, the major reforms to Ottoman divisional and army corps structure preceded his arrival.

Discussing the Ottoman preparations for defending the Peninsula, Professor Uyar describes the detailed defence plan for the Ariburnu area prepared by Mehmed Şefik, commander of the 27th Regiment, who believed this area was the key to the defence of the northern peninsula. Also, as commander of the corps reserve 19th Division, Mustafa Kemal conducted an exercise to counter a landing between Suvla and Kumtepe on 19 April, and had scheduled a further exercise for 25 April. Together, these should have given the Ottoman forces a major advantage on 25 April.

However, Professor Uyar explains the detrimental effect on the defences around Anzac Cove resulting from intervention by von Sanders just weeks before the landing. When von Sanders overturned Şefik's plan, he reduced the force allocated to the Gabatepe-Anzac-Suvla region from a regiment to a battalion. Had Şefik's plan been in place on 25 April, the Anzac landing might have faced a stronger force than the four (large) platoons actually occupying the area between Bolton's Ridge and the Fisherman's Hut and inland on Third Ridge.

Instead, von Sanders gave greater emphasis to the Bolayir area, where a British diversionary force simulated a landing on 25 April, confirming his predilections at a crucial moment. Perhaps Australia and New Zealand have reason to be grateful to von Sanders for actions that made the landing easier than it might have been! The former Ottoman Empire might have had less reason to cheer his use of frontal attacks as he attempted to remove the invaders in the following weeks.

Professor Uyar shows how von Sanders' obsession with Bolayir, and the failure of the 9th Division commander Halil Sami to react promptly to the landings, endangered the Ottoman positions at Ariburnu and Helles. Mustafa Kemal's initiative saved the situation around Anzac, where he sent first the complete 57th Regiment, rather than the single battalion requested by Halil Sami, and later the rest of his division.

At Helles, Halil Sami's command paralysis was also overcome by the initiative of his subordinates. Between them, Şefik, Kemal and Halil Sami's subordinates at Helles saved the situation for the Ottomans. While Anzac forward elements reached Third Ridge, they could not hold it. Professor Uyar follows in detail the actions that eventually stabilised the front. From there, the campaign proceeded to its inevitable conclusion in December.

Professor Uyar resolves the enduring controversy about the presence of Ottoman machine guns and artillery on 25 April. He confirms that while machine gun positions had been prepared on Ariburnu, on 400 Plateau, and near the Fisherman's Hut, the initial pre-dawn landing was not opposed by machine

guns, which had been kept in reserve. The first four machine guns arrived at Scrubby Knoll on Third Ridge around 0740, and four more arrived at Chunuk Bair around 1000. Four more arrived around 1530.

As well, Professor Uyar shows that only limited Ottoman artillery was present on 25 April (only 13 operational pieces before 1030, three of which were captured near The Cup around 0700, but later re-captured). Another eight arrived around 1030, a further eight around 1600, and a final eight around sunset, but those were not actually engaged on 25 April.

This book complements that by Chris Roberts (*The Landing at ANZAC 1915*, Big Sky Publishing, 2013). Read together, they provide as good a picture of events on 25 April as is likely to be available at this remove.

Australia's Few and the Battle of Britain

Reviewed by Val Pylypenko

Kristen Alexander's latest title continues the exploration of the lives and wartime careers of individual Australian pilots (as previously addressed in her well-received biographies of Clive 'Killer' Caldwell and Jack Davenport) and also those who contributed to the fateful victory of the RAF in the Battle of Britain.

Epic battles must, of necessity, focus primarily on the bigger picture—the strategic balance and the opposing forces, the rival commanders and their battle plans, the weaponry utilised by the both sides and, sometimes, almost as an afterthought, the individual combatants who fight, and, all too often, die in the subsequent struggle.

The author, in this extremely well-researched book, has skilfully reversed the focus without the reader losing this valuable larger perspective. The eight Australian pilots featured were carefully selected by the author to represent a wide cross-section of young pilots-to-be: state/private school education, Catholic/Protestant upbringing, RAAF/short service commission/RAF Volunteer Reserve-trained, married/about to marry/single during the struggle and finally, the 'natural' pilot/others about whom the training officers had lingering doubts. In a period of just 11 weeks during the summer of 1940, seven were to perish during the Battle of Britain—all young men in their twenties. The sole survivor died more than 60 years later, aged 83, in 2001. Hail the fallen warrior.

The author has gone far beyond the normally brief outline of the subjects' family background. Using diaries, letters, newspaper articles and interviews with family members, she provides a detailed background of not only each of the eight but, where she considered it relevant, their parents. This almost forensic analysis assists the reader to better understand the men, their view of the world and thus some of their subsequent actions. As the author takes the reader through the early flying experiences of each of the individuals and then the various stages of their subsequent flying career, initially it takes some effort to disentangle their stories but as their stories unfold, you soon develop the feeling that you 'know' and understand each of these young men.

While the focus of the narrative is naturally on the eight individual pilots, the author is not only able to provide a incisive analysis of the Battle as it developed and the major turning points but also how other Australian pilots contributed to the RAF efforts during this period. Of the eight, Dick Glyde was to share the honour of being the first Australian to claim a victory during the Battle with Stuart Walch, both destroying a Me-110 in separate actions on 11 July. Two days later, the first of the eight was to die in combat.

As the Battle intensified, the physical and mental strain on the pilots increased. The unit histories, log books, combat reports, personal diaries and interviews with surviving squadron members allowed the author to provide further insight into each man and how he coped—or didn't. One was convinced he would not survive the war but was determined to claim at least two victories: one to even it up for his own expected death and the second to justify his training. Another suffered from depression and other ill-effects of battle fatigue, a condition little understood at the time. As the author points out, the desperate shortage of pilots meant that there was no possibility of taking a few days R&R and no counselling or psychological treatment for anxiety was available. Everyone just had to 'get on with it' as best they could.

The author also provides an insight into their life away from 'scrambles', glycol and combat. A number of the eight found love, with one marrying and another becoming engaged. These carefree times provide glimpses into another side of the men in this narrative so carefully and lovingly crafted by the author. But the war is never far away. Combat sorties are ever-present and as the eight dwindle in number, the reader feels they are losing touch with friends one has come to know and admire.

With the Battle finally won, the author turns to the family and friends of the seven who had fallen. And this is another strength of the book—the painstaking detail the author provides regarding how these people took the loss of these young men, and their subsequent lives without them. All were proud of their men, their courage and their achievements: ordinary men who had made extraordinary efforts and died for a cause in which they fervently believed. Their short lives were celebrated by the people they had left behind, people who would never forget them.

Kristen Alexander's respect and admiration for the eight Australian pilots is evident in every page of this excellent book. It is a testament to both her writing and research skills and their lives and devotion to duty.

The War with the Ottoman Empire, Volume II: the Centenary History of Australia and the Great War
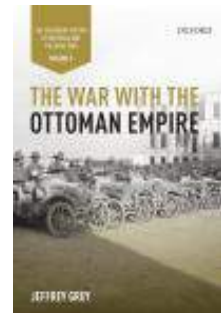
Reviewed by Craig Beutel, Department of Defence

One hundred years after the outbreak of the First World War, Australians again are deployed to the Middle East. As we look to the fissures in 21st century Middle Eastern geopolitics, with rampant sectarian violence and civil war, it is reflective to consider the contribution Australia made to the defeat and deconstruction of the Ottoman Empire.

Jeffrey Grey's *The War with the Ottoman Empire* is the second volume in the five-part *The Centenary History of Australia and the Great War* series. Grey notes that most Australian books on the topic are either 'relentlessly tactical', reflecting Australia's true level of influence in the conflict, or strategic only in the sense that they 'pander to stereotypes and caricatures' of British leadership absolving any Australian culpability.

Grey focuses the book on what we now consider the operational level, as he explains Australia had little influence in strategy. The tediousness of staff work at the operational headquarters—planning, personnel management and logistics—are therefore abundant in Grey's work. Nevertheless, he manages to present a convincing narrative of the campaign, linking with key tactical challenges while reflecting on the inadequate machinery for effective decision-making at the political level.

As no Australians functioned at the operational level until Chauvel was given corps command in 1917, Grey examines the campaign from the headquarters of the Mediterranean and Egyptian expeditionary forces. The British generals in command had constant difficulty in balancing the political demands of the

Australian Government for an Australian commander against the lack of operational experience in the officers presented. Eventually, Chauvel would demonstrate his capacity for command but only through mentoring and battlefield experience.

Grey sets the scene by framing Britain's actions in the region in the pre-war years. He identifies that the problems the British Army faced after the South African campaign were twofold; the gamut of possible roles, from mid-intensity conventional war to imperial policing, and that the role of the Army in imperial defence had been de-emphasised in favour of the Royal Navy. As a result, the Empire was not prepared for the large-scale conflict that was to ensue.

In discussing the Gallipoli campaign, Grey laments its focus in Australia's national memory, suggesting that it has unfairly diminished the importance of actions in the Sinai. From a British point of view, he notes Gallipoli was a 'lost campaign fought early in the war by an unprepared, inadequately equipped and poorly led army in a strategically marginal region for dubious and largely unrealisable benefits'. However, Grey warns of literature focused on distilling the operational and strategic problems of the First World War down to the interplay of key personalities. While not defending Hamilton, Grey cautions against blaming all of the difficulties on the operational commander, noting *inter alia* that a lack of men and resources, and poor staff work contributed to the eventual result.

The War with the Ottoman Empire is a timely reflection on Australia's long military history in the Middle East, which revisits lessons that can be applied to contemporary campaigns. Grey demonstrates that the effects of poor strategic thought and political consensus can be a serious operational impediment and have longer lasting effects than otherwise considered at the time. The effect of long periods of peace in the pre-war years is also messaged, in the context of military capability and preparedness, with the Empire proving ill-equipped in terms of the force required and training needed for the Great War, a lesson sadly repeated in its aftermath.

Air Power in UN Operations: wings for peace

A. Walter Dorn (ed.)
Ashgate: Farnham UK, 2014, 388 pages
ISBN: 978-1-4724-3549-1
£25.20
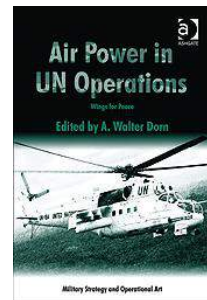
Reviewed by Squadron Leader Travis Hallen, Royal Australian Air Force

Air power's employment in support of UN operations is little researched and poorly understood. This is a logical though unfortunate reflection of the primacy of land forces in peacekeeping, peace enforcement and humanitarian operations. However, as *Air Power in UN Operations* highlights, air power has a long history in support of the full spectrum of UN military missions.

From the Congo in 1960 through to Haiti in 2010, it is a history replete with lessons that hint at the potentialities to be exploited and challenges to be overcome if the UN and its member states are to reap the benefits air power offers. However, although *Air Power in UN Operations* provides a useful introduction to the subject matter it does not provide the 'conceptual base to examine joint [UN] air ground operations' called for by Lieutenant General Roméo A. Dallaire (Retd) in the book's foreword.

The main criticism of the book is that it lacks coherence. The division of the book into six parts is logical. Part I introduces the challenges of UN air power through examination of operations in the Congo between 1960 and 1964. Parts II to V address the four core air power roles: air mobility, ISR, control of the air (no-fly zones) and strike. The book concludes by looking to the future of UN air power. Although well structured, the book appears to suffer from an absence of clear direction to the various authors on the editor's principal intent, the result being that within each part the individual chapters are not well connected.

A chapter on 'Observing air power at work in Sector Sarajevo, 1993-1994', in the section covering no-fly zones, deals more with limitations of information sharing and the utility of airlift than the rationale for and challenges in enforcing no-fly zones. Additionally, two of the four chapters dealing with UN air power in a strike role focus primarily on NATO air power in Bosnia and Libya. This disjointedness makes it difficult for the reader to gain a clear appreciation of where UN air power is currently, and what its future will be. Indeed, it is tempting to assume that the book is intentionally symbolic of the disorganisation of UN air power.

Despite the mishmash of chapters, *Air Power in UN Operations* does have some strengths. Viewed individually, some of the chapters provide unique and interesting insights into UN air operations. The abovementioned chapter on air power in Sarajevo provides an excellent ground-up perspective of UN air power in support of complex operations. More relevant to the ADF, 'Humanitarian Relief in Haiti, 2010' examines how the US Air Force and the UN refined their relationship during the humanitarian response to the Haitian earthquakes. These lessons and the recommendations provided by the author to overcome them would be useful for anyone involved in the planning and execution of expeditionary humanitarian operations.

Finally, the book benefits from its uniqueness. As the first book to deal specifically with the subject, *Air Power in UN Operations* lays the foundation for what is an increasingly relevant area of research. Various chapters deal with a range of novel yet important aspects of UN air power, such as command of multinational forces; the control, coordination and integration of different national air and ground elements; the provision of leased aviation solutions; and the potential of remotely piloted aircraft systems as a key feature of future UN missions. These are subjects that present significant barriers to the effective and efficient employment of UN air power, as well as offering potential solutions to challenges faced by UN military officials.

It is unlikely that the UN's white aircraft will ever achieve the iconic status of the blue helmet. Even the most ardent air power advocate must acknowledge that the substitution of aircraft for boots on the ground is not a viable option for the vast majority of UN military operations. However, this book highlights that air power plays an important role in the effectiveness and efficiency of UN military missions, a role that air power theorists would be well served to investigate more closely. To this end, *Air Power in UN Operations* provides a useful compilation of potential avenues of research worthy of further investigation.

Air Power in UN Operations is recommended for those with an interest in air power history, air power in non-traditional operations or UN operations more generally.

Britain and the War on Terror: policy, strategy and operations

Warren Chin
Ashgate: Farnham UK, 2013, 250 pages
ISBN: 978-0-7546-7780-2
£68
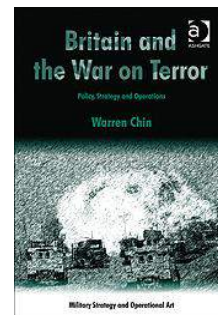
Reviewed by Dr Ian Wing

This excellent book provides a detailed and thorough examination of British policy, strategy and operations since the advent of the so-called 'War on Terror' in 2001. The attacks by Al Qaeda against the US led to a sea-change in the policy focus of the British Government. Britain found that it needed to reorientate its armed forces away from preparing for conventional interstate conflicts and messy civil wars. Henceforth, its focus would be towards more complicated engagements with non-state actors such as Al Qaeda.

The next decade was to feature two lengthy counterinsurgency campaigns in Iraq and Afghanistan. Britain entered these wars with a reputation for expertise in dealing with terrorists and insurgencies. It was to leave them with this reputation diminished. Both campaigns proved to be intensely problematic, leading to great soul-searching among military theorists. Neither was to end well with a clear military victory for Coalition forces. In fact, both insurgencies continue to evolve and threaten the central governments of Iraq and Afghanistan. This raises still more questions about the role and methods of British forces in these wars and for future wars.

The author, Dr Warren Chin, is a Senior Lecturer in the Defence Studies Department of King's College London and a Visiting Scholar at the International Centre for Muslim and non-Muslim Understanding at the University of South Australia. His research and publications cover warfare and military history, with a particular focus on recent British counter-terrorism and counterinsurgency operations. His body of work presents a trenchant critique of British performance overall.

The book is organised into eight chapters. The first introduces the major theme of the work, which is to seek to understand the UK's contribution to the war on terror through the prism of strategic theory. It confines the scope of the study to the period of 2001 to 2010, during which the British policy agenda was set by the New Labour Government. The introductory chapter presages the later chapters, which describe many failures to link the desired policy and strategic ends with adequate operational means. And it provides the six questions that the work will address:

1. What were the political goals of this war and what was the balance between material objectives and the pursuit of objectives grounded in values?

2. Did the British Government understand the nature of the enemy?

3. How carefully did the government calculate the costs and benefits of using force?

4. Was the government able to balance ends and means?

5. Did British strategy rely too heavily on technology?

6. Did the government identify the right centres of gravity in this multi-faceted war?

The second chapter deals with questions of British grand strategy and military strategy. Chin asserts that the difficulty in understanding the adversary and crafting a coordinated strategy with which to defeat it was made even more challenging by resource constraints. Plus, the decisions to commit British forces to Iraq and Afghanistan were to actually play to Al Qaeda's strengths.

The third chapter adopts a different approach, which will be very familiar to military intelligence professionals, by first seeking to better understand the enemy. Al Qaeda was far from being an irrational actor made up of deluded sociopaths and was, in fact, a determined and well-organised force. This misunderstanding was to lead to negative consequences for the troops on the ground.

The British war in Iraq (2003-09) and Britain's initial enthusiasm for the US-led invasion is examined in Chapter Four. Whether the case for war was based in mendacity or incompetence, Chin finds that the major driver for British involvement was Tony Blair's conviction that the UK had a duty to give concrete support its major ally, the US. The next chapter continues to examine Iraq and it finds that the political and strategic ends for the Iraq War foundered at the operational and tactical levels when the British became the occupying power in Basra.

Chapter Six takes the reader to the British war in Afghanistan (2006-10) which, while driven by very similar political and strategic objectives, presented a different set of serious operational and tactical problems for British forces. These problems saw varied attempts to employ kinetic means, based on technology and firepower, and population-centric means, based in provincial reconstruction. These themes will be very familiar to readers who have served in Afghanistan. Chin writes:

> In spite of the best efforts of both the government and the military not to repeat mistakes made in 2003, that is precisely what happened and this ensured that what was believed to be a detailed and methodical plan disintegrated in the compounds of Sangin, Musa Qala and Now Zad in summer 2006.

At the most fundamental level, fighting an asymmetric war in a failed state such as Afghanistan is replete with difficulties.

Having covered the two major military campaigns, Chin turns to the domestic front in the war on terror. When compared with the weighty evidence in his critiques of Iraq and Afghanistan, Chin is less critical of British performance in the field of homeland security. Chapter Seven deals with the effectiveness of the counter-terrorist strategy of 'CONTEST' (which includes preventing terrorism and radicalisation; pursuing terrorists and their sponsors; protecting the public and key services; and preparing for the consequences of a terrorist attack) and how its implementation was undermined by departures from its requirements. Chin contends that one negative outcome was that the British legislative agenda 'helped stigmatise and criminalise the British Muslim community and compounded its sense of isolation and alienation'.

Chin concludes the book with a chapter that summarises his findings on why British strategy failed and gives the major lessons to be learned from this failure. He argues that the strategic aims of the British Government were almost impossible to achieve and, when the task was given to British forces, they were given insufficient resources to get the job done. Chin closes his work with a silver lining among the dark clouds which is that although the war on terror 'represented a classic example of how not to plan and conduct a war', the situation by 2010 was that 'Islamic terrorism remained a diminished but still potent threat'. Of course, this assessment was made before the menacing rise of Daesh in Syria and Iraq.

This is an excellent work which is recommended for students of war who appreciate the linkages between policy, strategy and operations. It is also likely to interest readers who wish to better understand how one of the most powerful countries in the world has found it so difficult to overcome the challenges of terrorism and insurgency.

READING LISTS

Professional military reading plays a vital role in developing knowledge that will assist with good judgment, effective leadership and the pursuit of excellence.

Each of the single Services regularly publishes a 'recommended reading list' for its officers. The listings are not meant to be exhaustive but provide a starting point to find material according to an individual's particular interests.

They are recommended to all ADF officers, and to others who wish to further their professional education and development.

Chief of Navy's reading list

<https://www.navy.gov.au/spc/publications/chief-navy-reading-list/cn-reading-list-2014>

Chief of Army's reading list

<http://www.army.gov.au/~/media/Files/Our%20future/LWSC%20Publications/SP/sp323_CAs_Reading_List_2012-Land%20Warfare%20Studies%20Centre.pdf>

Chief of Air Force's reading list

<http://airpower.airforce.gov.au/Publications/Details/610/CAF-Reading-List-2015.aspx>