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Editorial

This issue is dedicated to bringing you the winning essays of the 15th Annual CDF Essay Competition 2001. We received an encouraging 160 entries, tackling a wide range of topics. A large number of entries amounting to 20 per cent has terrorism as the theme. This indicates that SAF officers have kept abreast with the implications and challenges of the September 11 attacks; and that they are in tune with the changes in the international security agenda.

The winning essay, *Defending the Lion's Den: The New Agenda for National Security in Singapore*, by CPT Alfred Fox calls for a re-examination of established ideas and practices about safeguarding national security. Challenges that need to be faced include integration of security agencies, effective intelligence sharing and counter-intelligence, and competent crisis management.

In *Embracing Network-Centric Warfare in the Information Age: Buying the Sizzle But Not the Steak?*, MAJ James Tan Ming Chong contends that the SAF should plug into Network-Centric Warfare and recommends how this can be done while surmounting the challenges and avoiding the pitfalls of such developments.

The third prize winner, CPT Frederick Teo Li-Wei, subjects the context and nature of asymmetric warfare to critical analysis. His essay, *Rethinking Western Vulnerabilities to Asymmetric Warfare*, challenges commonly held notions of Western vulnerability, like media manipulation and fear of casualties and reminds readers of the continuing relevance of symmetric conventional warfare.

In the Merit Award category, MAJ Lim Khia Teck's *Preparing for Uncertainty: Beyond Scenario Planning* examines how we can cope with uncertainty through empowerment, building good sense through risk tolerance, skilful problem-solving and maintaining a questioning mind. In *Operation Eagle Claw, 1980: A Case Study in Crisis Management and Military Planning*, LTA Chua Lu Fong reviews the disastrous attempt to rescue American hostages held in Teheran during the Iranian Revolution, and draws the lessons learnt in strategic decision-making, operational planning and execution.

In *Deterrence and Coercion for Air Forces of Small Nations*, LTA Ng Pak Shun argues that coercion is a useful pro-active instrument to complement the more traditional tools of diplomacy and deterrence, and elucidates on how such a strategy might be applied by the air forces of small countries. Finally, LTA (NS) Toh Boon Ho discusses Singapore's foreign economic policy in *Security By Other Means: The Role of Free Trade Agreements in Singapore's Economic Security*. He argues that in the wake of the WTO setback in Seattle, 1999, the 'indirect approach' of FTA would allow Singapore to engage external and regional powers as well as maintain competitiveness.

Due to space constraints, we will be publishing the remaining three Merit Award essays in the next issue which will feature mainly SAF related issues. LTC Richard Pereira's *The SAF: From Training to Learning for Fighting Effectiveness*, MAJ Roland Ng Kian Huat's *Riding the Crest of RMA: Massive Systemic Shock Can We Do It?* and MAJ Seet Pi Shen's *A Culture for Transformational Change Strategies for the Singapore Armed Forces* will form the core of this theme.

Congratulations to the prize winners! Many thanks also to all participants for putting in the time and effort in submitting their essays. We look forward to more quality entries for this year's CDF Essay Competition, which closes on 31st December 2002. *POINTER* readers are encouraged to read the essays critically and to submit any views or comments on the arguments of the award-winning authors to the Editor or Assistant Editor *POINTER*. We will be pleased to publish such letters to the Editor as it would stimulate debate and discussion on issues of interest to *POINTER* readers.

Editor, *POINTER*

Defending the Lion's Den: The New Agenda For National Security In Singapore

by CPT Alfred Fox

"It's a different kind of warfare, it will require different capabilities, expertise and weapons"¹

Deputy Prime Minister Tony Tan

No one should be surprised by the amount of concern that has been placed on national security since the terrorist attacks of September 11. Most security frameworks and institutions seem to work best in times of crisis or the imminent threat of danger. While dealing with the potential threat is the first logical step, there are more concerns at hand. For one, the vulnerability of nations to a large massive attack and slow chemical-biological terror has been exposed. If we are to work towards a more concrete attempt at dealing with these issues, we must do much more than simply respond to the current situation. Instead, we must look towards a future where the threat of terrorism is more constant, highly likely and more superior in planning and execution than before.

The plan for action in Singapore seems to have begun to take shape, but the question over where all this is headed remains uncertain. More importantly, the potential problems and possible solutions have yet to be addressed. This essay aims to explore the shift, if any, in the national security agenda of Singapore in the wake of heightened terrorist activities globally. It attempts to provide a closer look at areas of particular concern by highlighting subjects which will see greater exposure, attention and commitment of resources. It also explores some of the driving forces which will continue to shape the way that national security policy in Singapore is formulated. In doing so, it will highlight some teething problems and possible solutions to them.

First Things First: National Security as a Concept What Has Changed?

Today's climate is one of unanswered questions and shifting paradigms. The global strategic environment lacks the clear delineating lines of East-West ideological divides and the bi-polar climate which characterised the Cold War. Instead, the past decade has seen low intensity conflict and intra-state violence come to the forefront due to a lack of clear and specified blocs. Objectives of conflict are often blurred and transnational alliances transcend geography and ideology. A look at the geostrategic dynamics of today's world requires a greater degree of understanding and sensitivity to the trends that are underway which alter our national security.²

In view of such changes, the national security outlook in Singapore has changed considerably to align itself to a position that is better equipped to anticipate, evaluate and respond to national security threats. The threat that has been classified as unconventional has come to the forefront in the light of recent events.³ The current wave of international, transnational and domestic terrorism has without a doubt reshaped the way we define our national security concerns. To simplify matters and avoid semantic confusion, we will look at terrorism as:

"The threat and/or use of extranormal forms of political violence, in varying degrees, with the objective of achieving certain political objectives/goals. Such goals constitute the long range and short term objectives that a group or movement seeks to obtain. The ramifications of terrorism may or may not extend beyond national boundaries."⁴

As such, national security concerns in Singapore revolve today around a threat which has received increased attention and possesses powerful ramifications - that of terrorism.⁵ It is a threat which has exposed the

vulnerabilities of even the most prepared and well equipped states. There are, in principle, a number of pressing issues.

Wake Up Calls: Raising Alarm Bells?

The spectre of terrorism has received new momentum from a number of concepts. For one, the impact of "Globalism" and technology have played major roles in the increased propensity of terrorist attacks. Globalism remains today as the platform upon which terrorist actions gain widespread influence and have far reaching effects. With borders disappearing, the impact on security can only be magnified.⁶ Technology itself has created new vehicles for terrorism in the form of biochemistry, information systems and transportation systems. Advances in biotechnology mean that storable biological weapons possess the same lethality today as small nuclear weapons. In some ways, such weapons are a cheaper alternative and their production can easily be kept a secret. Perhaps more frightening is the lack of any commercial device capable of detecting any biological agents.⁷ More issues arise when the problem interacts with changes in transport and commercial shipping.

The global environment has also resulted in hacking and cyber-crime being common routine these days. The main concern in this area is the possible use of such technology to do greater damage than to deface a government website. Attacks on integrated financial systems can have just as devastating effect on Singapore as conventional ones, and ironically enough, require only a small team of skilled computer experts with internet access.⁸

Furthermore, our dependence on transportation systems like aircraft and shipping vessels will not see a drastic decline, even after graphically seeing how they could be used as weapons. Without doubt, an aircraft could easily become a weapon without warning, shipping vessels can be launch platforms for guided weapons, and biological weapons can be stored in many forms of containers.⁹

Viewed in this light, security of a state, according to Dave McIntyre, forms a strategic and logical cycle of events:

DETERRENCE ---> PREVENTION ---> PREEMPT ---> CRISIS MANAGEMENT ---> CONSEQUENCE MANAGEMENT ---> ATTRIBUTION ---> RETALIATION ---> DETERRENCE.

In this cycle, deterrence is the most favoured option, which on failing, will cause decision makers to turn to the next step and so on, until deterrence can be achieved again.¹⁰ It is with this framework in mind that we shall examine the challenges facing Singapore in homeland security.

The Challenges: Integrated Functionality or "Jointness"

Problems of national security necessitate flexibility and variety in terms of policy choices. More often, policy in general is shaped by a host of factors which offer a limited and practical range of choices.¹¹ As a result of the need to coordinate various agencies, national security concerns have often been a powerful centralising force in the Singapore government. While the impact of national security has been more at a policy level such as the increasing importance of defence spending on the national economy, there has been, until recently, a muted institutional level response to national security. Because the terrorist threat is unexpected, complex and multi-dimensional, a well co-ordinated strategy is required to deal with threats.¹² As this requires different agencies, the logical solution is to draw different organisations together. The newly formed National Security Secretariat (NSS) seems to be a step in the right direction.¹³ Although the NSS is a fairly young and recently publicised organisation, its value should not be under-estimated as it functions as an interdepartmental committee co-ordinating measures and implementing policy which spans across the services. As such, the NSS will feature more as a mechanism for reconciling differences and co-ordinating policy than for creating it. There is now more than ever, a greater need for closer co-operation between the Defence and Home Affairs ministries. In essence, the events of September 11 showed that the traditional division of security threats into external and internal threats no longer hold.¹⁴

The need for "jointness" is more prevalent now than before such that time must not be wasted on interdepartmental and inter-service co-ordination. Seamless planning and execution is crucial in the fight against a terrorist adversary which knows no boundaries or timelines.

One of the possible stumbling blocks to establishing this principle of "jointness" will be the possibly uneven levels of preparedness between organisations in MINDEF and the Home Affairs Ministry. It is vital that cross training among the police and military take place at the soonest possible time while integrating the civil defence component. The problem lies in the difficulty faced in co-ordinating such training. While proficient at the component level, a combined anti-terrorist outfit and its service support forces lack the time and realistic training to adequately prepare them to meet a real incident. As realistic as an exercise is, it still remains as an "in-house" program, because those who take on the role of the terrorist are often drawn from the same organisation.¹⁵

Two approaches are key to solving his problem. First, it must be understood clearly that such attributes cannot be carried over to terrorist groups and their assumptions are completely different and unpredictable. Next, simulation must not only be with counterparts from other forces around the world, it must also incorporate the dynamics and intricacies of realistic hostage-terrorist interaction, the tensions of media coverage and the influence of the public and policy makers. In short, effective training must be realistic and encompass all possible moving elements.¹⁶ In addition, it is crucial that responsibility and authority should go together at some point in time. Essentially, an official response for a mission or policy should be given sufficient authority (perhaps to set budgets) to accomplish it.

While the NSS aims to co-ordinate internal agencies, it is also important that steps are taken to reconcile the aims and objectives of internal and external mechanisms. Ideally, information must flow smoothly between those who are privy to information from external sources along the intelligence channels and those who have access to the domestic information environment, and vice versa. Ostensibly, the function of intelligence is heightened in this new climate.

Intelligence as Function and Necessity

With timely and accurate intelligence, the range of choices available is illuminated. It features in all phases of the homeland security cycle of events. While good intelligence may not necessarily lead to wise policy choices, policy decisions cannot effectively respond to actual conditions, reflect national interests and adequately protect national security without sound intelligence.¹⁷ Having said that, intelligence in the present climate will take on a completely different form than that of traditional intelligence. Firstly, where blanks in traditional intelligence (such as military intelligence) can be filled by making reasonable assessments based on regular and oft-studied concepts and models which the other side can be relied upon to follow, the reliability of making similar assessments for anti-terrorist operations is almost nil.¹⁸

Unlike conventional forms of confrontation, terrorism can be expected to follow a highly flexible and unpredictable course. Apart from attempting to discern terrorist operations, intelligence plays a key role in other phases such as *containment*, where special attention is given to the movement of would-be or suspected terrorists. Intelligence agencies in this aspect have to identify possible groups in the region which may offer assistance to such a movement. In a similar fashion, intelligence in the containment phase implies the need to determine the level and degree of terrorist interaction with the population.¹⁹ Clearly, the focus for intelligence agencies must be toward domestic, regional and international sources to ascertain the details of foreign support for a movement and its active supporters in other countries, if any. The sharing of intelligence across ministries and boundaries is key to a timely and accurate picture. The extensiveness of the Al-Qaeda network bears testimony to this necessity.²⁰

Intelligence also plays a considerably important role in the *isolation* and *elimination* phases of a national security and anti-terrorism policy. The role of readily available information on the capabilities and intentions of possible threats to national security should not be underestimated. It must feature extensively in the period following the successful apprehension of suspected terrorists, since greater effort will have to be committed to track those who have escaped the dragnet and are lying low.²¹ In this way, the task at hand

for the intelligence community in Singapore has just been made more difficult with the recent apprehension of suspected terrorists.

One of the main areas which may need improvement is the commitment to counter-intelligence. Counter-intelligence as a concept is mainly concerned with preventing information from falling into the wrong hands and the quick detection and elimination of any attempts at misinformation. The existing programme may need to be restructured away from a broad-front approach to focused and well-staffed efforts targeted at movements and even suspected individuals.²² The need for a specialised department dealing with cyber-terrorism may feature here.

In this sense, the involvement of intelligence in such a new concept of "homeland security" necessitates an extensive network and a matching controlling organisation. Herein lie the challenges ahead for the institutional reform of national security in Singapore. While the NSS will feature primarily as a co-ordinating agency, existing organisations responsible for intelligence gathering will have to be reinforced with added resources which will allow the apparatus to be able to take on the increased workload. Such an effort will undoubtedly require time and a timeline of a few years to work out a concrete concept seems plausible.²³ In particular, effort needs to be directed towards strengthening the resources and capabilities of Human Intelligence (HUMINT), enhanced forms of analysis and operations.

In such a move, it is important that there be a corresponding and significant decrease in the barriers between law enforcement and intelligence.²⁴ To make up for the shortfall in resources, one possible interim measure could look at pairing personnel from MINDEF and the Home Affairs Ministry and utilising their expertise in collection, analysis, counter-intelligence and investigation. The Security Policy Review Committee, which is chaired by Deputy Prime Minister Tony Tan, must now look past the building of a new security architecture. Apart from reinforcing the resources for preventive measures, it will need to look at the issues of crisis management should the unforeseen happen.

Crisis Management Stability in Emergency

Crisis management involves attempts to prevent crises from occurring, to have an effective response to an actual crisis, and to provide plans for recovery and rehabilitation.²⁵ The primary problem is common enough lack of realistic exposure to crisis management in the face of terrorist threats but it is also something we are actually glad not to have. Overcoming this first step will involve the same integrated approach espoused in the search for "jointness". Essentially, our crisis management centres and personnel should undergo as realistic a form of training as those trained to deal with the threats by force. Crisis management in this new terrorism-inspired terrain must be able to adapt to unpredictable circumstances. Some important areas to focus on include information and media management, priority of decision-making and the management of perceptions.

The three proposed areas of focus have very much to do with the key decision makers in a crisis and the need to control public opinion and sentiment. Bearing in mind that the idea of dealing with suspected terrorists and attacks is an unfamiliar concept compared to conventional war, any crisis management infrastructure must be fully aware of the impact that beliefs, attitudes, perceptions and public opinion can have on each other. Because the threat of terrorism is likely to be localised and on a small scale, it is important that the public and media be managed correctly, failing which two possible dangers could happen. First, given the media's constant need for a news-breaking story, the possibility of reporters interfering with a potential terrorist incident is high. As a result, the operations may be compromised or worse, an adversarial relationship may develop between the media and the crisis management teams. Another possibility, although more far-fetched, is the likelihood that improper information management and handling of the media may result in the terrorists and their cause becoming martyred.²⁶

Solutions can be complex and typically they cannot be easily extrapolated from current trends. During the Gulf War, Cable Network News (CNN) played an important role in providing the global public with close to real-time information. Political and military decision-makers have to take this into account as a relevant factor for their decisions. It is also clear that decision makers will try to control that public information factor.

This was relatively easy during the Gulf War through the classical means of censorship. This direct control of the news-media, however, can have non-linear effects in that the public response to that control can change political parameters which then can act back onto the military decision makers. The complexity of this public information system will increase as multiple access to CNN type information becomes more available. Under those circumstances a plain censorship decision might not lead to the desired effect but could easily achieve the opposite outcome.²⁷ Thus it would be very important in future crises to build careful models incorporating those factors which were absent or much less important in classical military planning.²⁸

Consequence management is the capacity to deal with the aftermath of an attack. All levels of government in Singapore must develop the ability to respond effectively within hours, if not minutes, to any threat of destruction against local targets with appropriate and specific measures to reduce casualties and damage.

The advantage to having a crisis management system in place is that we can practise with it and learn what does not work.²⁹ In the event of a crisis, problems already would have been corrected and reactions can be instantaneous. If there exists a developed and implemented comprehensive disaster recovery, chances are good that we are already safeguarded against the terrorist threat. Drawing some parallels with the corporate world, the crisis management departments should therefore encompass threat assessment (based on potential crisis scenario), human resources, legal counsel, information management, public relations and psychological counselling.³⁰

The Fourth Dimension Through the Looking Glass

Choosing to increase security measures in response to a perceived terrorist threat necessitates the use of discretion when implementing changes or upgrades in security policy to avoid widespread panic with the public. Announcements regarding security increases should be made with a great deal of sensitivity. Yet, there are some areas which are peculiar to Singapore which must be addressed. The "it cannot happen here" syndrome is one that must be arrested at the soonest possible time.³¹ It is the same impetus which caused some to laugh when the SAF began enhancing security at important installations within the country. Failure to realize the dangers and choosing to remain in a "comfort zone" will lead to complacency, which may be the prelude to far more dangerous threats.³² Another area of concern is the nature of race relations within Singapore. It is important that confidence, friendship and trust exist among the races to ensure that relations are strong enough to withstand terrorist acts with an ethno-religious dimension.³³ Further study on the topic of homeland defence and national security could therefore explore the social element and the intricacies of race relations, and the necessary steps to deal with contingencies in this sphere.

Conclusion

Attempting to broaden awareness, this essay has addressed some key concerns with regards to the new formula for national security in Singapore. In light of the increased means and ruthlessness of terrorists, safeguarding our national security needs integrated functionality ("jointness") of Singapore's security agencies, effective intelligence sharing and counter-intelligence, competent crisis management as well as maintaining vigilance and harmony in our society. While it is clear that the terrorist threat has increased, it must also be clear that our response can be well-prepared, well co-ordinated, and multi dimensional.

Endnotes

1 Lim, Lydia, "S'pore to Have Homeland Security", in the *Straits Times* (Nov 5, 2001).

2 RADM Teo, Chee Hean, "The Search for New Strategic Directions", in a speech at the opening of the SAFTI-MI Australian National University Joint Masters Programme in Strategic Studies (10 Jan 1995).

3 *Defending Singapore in the 21st Century*, (MINDEF, 2000), p. 8. It underlines the notion that unconventional threats in the form of terrorist acts and subversion continue to be a potential danger.

4 Shultz, Richard H. Jr., & Sloan, Stephen, "International Terrorism: The Nature of the Threat" in Shultz, Richard H. Jr., & Sloan, Stephen (eds.), *Responding to the Terrorist Threat Security and Crisis Management*, (Pergamon Press: USA, 1980), p. 2.

5 For a historical perspective of terrorism and its psychology, see Morris, Eric & Hoe, Alan, *Terrorism: Threat and Response*, (Macmillan Press: London, 1987), p. 13-29.

6 See Maj Lim Gek Seng, Ronnie, "Globalisation and Its Impact of Security in Southeast Asia", in *POINTER*, (Vol. 26 No.3, July-Sep 2000), p. 25-39. The author looks at the impact of globalisation on security within a regional context.

7 Cordesman, Anthony H., "A New Transatlantic Strategy for Terrorism and Asymmetric Warfare", in CSIS.org., Centre for Strategic and International Studies Website (Nov 7, 2001).

8 Corbin, Marcus, "Organization for Homeland Security: Issues and Options", in <http://www.cdi.org/terrorism/homelandsecurity-pr.cfm>, (Dec 21, 2001).

9 Cordesman, Anthony H., "A New Transatlantic Strategy for Terrorism and Asymmetric Warfare".

10 McIntyre, David, "Winning this One The Logic of Homeland Security", in http://homelanddefence.org/bulletin/Primer_WinningthisOne.htm, (Anser Institute for Homeland Security, September 16, 2001).

11 Lyons, Gene M., & Morton, Louis, "Schools for Strategy: Education and Research in National Security Affairs", (Frederick A. Praeger Inc., 1965), p. 17.

12 Corbin, Marcus, "Organization for Homeland Security: Issues and Options".

13 "National Security Secretariat Formed", in the *Straits Times*, (7 Jan 2002).

14 Lim, Lydia, "S'pore to Have Homeland Security".

15 Sloan, Stephen, Simulating Terrorism: "An Analysis of Findings Related to Tactical, Behavioural, and Administrative Responses of Participating Police and Military Forces", in Shultz, Richard H. Jr., & Sloan, Stephen (eds.), *Responding to the Terrorist Threat Security and Crisis Management*, (USA: Pergamon Press, 1980), p. 117.

16 Ibid., p. 118. The author provides an alternative form of simulation which is termed as open-ended simulations technique, where the ultimate outcome is solely dependent on the manner in which the police, the terrorists, the hostages and other concerned parties interacted.

17 McCarthy, Shaun, *The Function of Intelligence in Crisis Management*, (UK: Ashgate Co., 1998), p. 40.

18 Uberoy, Virinder Maj. Gen., *Combating Terrorism*, (New Delhi: Intellectual Book Corner, 1992), p. 125.

19 Ibid., p. 127

20 "Jakarta and Bangkok to share intelligence on terror" in the *Straits Times Interactive*.

21 Uberoy, p. 129.

22 Taylor, Stan A., & Ralston, Theodore J., "The Role of Intelligence in Crisis Management", in George, Alexander L. (ed.), *Avoiding War: Problem of Crisis Management*, (Boulder: Westview Press, 1991), p. 396-397.

23 Lim, Lydia, "S'pore to Have 'Homeland Security'".

24 See Cordesman, Anthony H., "Defending America: Redefining the Conceptual Borders of Homeland Defence", in <http://cisis.cordesman.org>. the author expresses views on the need to relook at current intelligence fundamentals in the U.S.

25 Rosenthal, Uriel & Pijenburg, Bert, "Simulation-oriented Scenarios: An Alternative Approach to Crisis Decision Making and Emergency Management", in Rosenthal,

Uriel & Pijenburg, Bert (eds.), *Crisis Management and Decision Making*, (Dordrecht: Kluwer Academic Publishers, 1991), p. 3.

26 Lukaszewski, James E., "The Media and the Terrorist: A Dance of Death", in *Executive Speeches*, (1997).

27 "How can Chaos Theory be Applied to Crisis Management" (Dec 2001), in <http://www.santafe.edu/~gmk/MFCB/node.html>.

28 Ramakrishnan, Kumar, "Strategic Thought and the Shaping of Military Judgment", in *POINTER*, (vol.23 No.4, October-December 1997), p.76-100. The author argues that strategic thought will continue to be relevant to the 21st century military officer, and that it can help shape his military judgment.

29 McIntyre, David, "Winning this One The Logic of Homeland Security".

30 "How can Chaos Theory be Applied to Crisis Management"

31 Sloan Stephen, "Simulating Terrorism", p. 120-121.

32 Chua, Lee Hong, "Security But At What Price?", in the *Straits Times Interactive*, (October 16, 2001).

33 "New Push to Strengthen Racial Ties", in the *Straits Times*, (Jan 30, 2001).

Bibliography

Books

Defending Singapore in the 21st Century, (MINDEF, 2000)

George, Alexander L. (ed.), *Avoiding War: Problems of Crisis Management*, (Boulder: Westview Press, 1991), p. 396-397.

Hopple, Gerald W., Andriole, Stephen J., & Freedy, Amos, *National Security Crisis Forecasting and Management*, (Boulder: Westview Press, 1984).

Lyons, Gene M., & Morton, Louis, *Schools for Strategy: Education and Research in National Security Affairs*, (Frederick A. Praeger Inc., 1965)

McCarthy, Shaun, *The Function of Intelligence in Crisis Management*, (UK: Ashgate Co., 1998).

Morris, Eric & Hoe, Alan, *Terrorism: Threat and Response*, (London: Macmillan Press, 1987).

Rosenthal, Uriel & Pijenburg, Bert (eds.), *Crisis Management and Decision Making*, (Dordrecht: Kluwer Academic Publishers, 1991), p. 3.

Shultz, Richard H. Jr., & Sloan, Stephen (eds.), *Responding to the Terrorist Threat Security and Crisis Management*, (USA: Pergamon Press, 1980).

Uberoy, Virinder Maj. Gen., *Combating Terrorism*, (New Delhi: Intellectual Book Corner, 1992).

Journals and Articles

Corbin, Marcus, "Organization for Homeland Security: Issues and Options", in <http://www.cdi.org/terrorism/homelandsecurity-pr.cfm>, (Dec 21, 2001).

Cordesman, Anthony H., "A New Transatlantic Strategy for Terrorism and Asymmetric Warfare", in CSIS.org., Centre for Strategic and International Studies Website, September 19, 2001

Cordesman, Anthony H., "A New Transatlantic Strategy for Terrorism and Asymmetric Warfare", in CSIS.org., Centre for Strategic and International Studies Website, (Nov 7, 2001).

"How can Chaos Theory be Applied to Crisis Management" (Dec 2001), in <http://www.santafe.edu/~gmk/MFCB/node.html>.

Lukaszewski, James E., *The Media and the Terrorist: A Dance of Death*, in Executive Speeches, (1997).

RADM Teo, Chee Hean, "The Search for New Strategic Directions", in a speech at the opening of the SAFTI-MI Australian National University Joint Masters Programme in Strategic Studies (10 Jan 1995).

Maj Lim Gek Seng, Ronnie, "Globalisation and Its Impact of Security in Southeast Asia", in *POINTER*, (Vol. 26 No.3, July-Sep 2000).

McIntyre, David, "Winning this One The Logic of Homeland Security", in http://homelanddefence.org/bulletin/Primer_WinningthisOne.htm., (Anser Institute for Homeland Security, (September 16, 2001).

Ramakrishnan, Kumar, "Strategic Thought and the Shaping of Military Judgment", in *POINTER*, (Vol.23 No.4, October-December 1997), p.76-100.



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Embracing Network-Centric Warfare in the Information Age: Buying the Sizzle but Not the Steak?

by MAJ James Tan Chong Ming

The changes in military technologies have always affected the tools, tactics and system of making war.¹ Today, the "revolution in military affairs" (RMA) is used mostly to describe the potential leap in effectiveness promised by applying information-age tools to the exercise of military force. Information technology (IT) is enabling armed forces to undergo a fundamental shift from a platform-centric orientation to a network-centric one. Comprehensive studies are being undertaken to develop a "system of systems" to achieve "system over-match" against adversaries in a future conflict.

This essay outlines the concept and advantages of Network-Centric Warfare (NCW) in the Information Age. By embracing the development of a high-tech network-centric system, however, the SAF has to judiciously consider a host of related implications and challenges. Otherwise, precious dollars and efforts may be expended merely to develop a warfighting system which offers many promises but little real utility.

What is Network-Centric Warfare?

NCW may be described as an information superiority-enabled concept of operations. It generates increased combat power by networking sensors, precision firepower, decision-makers, and shooters to achieve shared awareness, increased speed of command², higher tempo of operations, greater lethality, increased survivability, and self-synchronization.³ In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battlespace.⁴ quantity and quality of data needed for global and precise situational awareness.

The second sub-revolution is in "shooter" or weapons technology. This, like the sensor revolution, is also twofold. Better streams of targeting data can permit a "dumbing down" of expensive guidance packages, while new designs, electronics, "lean" manufacturing, and mass production can decrease the cost for a given level of accuracy and capability.

The third sub-revolution is in information technology. The information revolution will dramatically increase the computing power to process, collate, and analyze this vast quantity of sensor data. The information revolution will also provide the means to distribute information to any recipient or "shooter" at near real-time speeds.⁵

In the coming decades, these three "sub-revolutions", coupled with decreasing prices, will interact and create a kaleidoscope of potential synergies that may be embodied in network-centric systems and transform the character of war.⁶

Promises of NCW Systems

NCW aims to empower warfighters and commanders with a dramatically improved sense-and-respond capability via a "system of systems". With internet-like connectivity from the tactical through strategic levels, force may be focused for greatest effect, and the timeline of the "Observe" and "Orient" portions of John Boyd's Observe-Orient-Decide-Act (OODA) loop may be compressed. One's decision loops can be spun so rapidly that an adversary must work continuously to fight yesterday's battles.⁷

A network-centric force will enjoy unprecedented shared information superiority. Information will not only be obtained from multiple sensors, human intelligence agents, and databases, but data will also be merged

from sources that have never been linked before. More importantly, data will be transformed into usable information and rapidly distributed.⁸

NCW will also offer substantial advantages in fighting large-scale conflicts over great distances with smaller, more dispersed and mobile forces. They will be able to act with disproportionate effect through accurate long-range fires and near real-time information sharing. Shared awareness helps to heighten the pace of operations and coordinate effects. These speed-of-command and self-synchronization features can combine to create a massing of effects rather than the massing of forces.⁹ NCW thus offers the potential to shift from large forces fighting sequential battles to precision near-simultaneous attacks by smaller forces.

The capability to strike effectively without massing forces creates significant advantages for ships, aircraft, and ground troops hindered by requirements for forward bases and logistical tails. Smaller, more agile forces also minimise casualty risks. These advantages make NCW attractive to political leaders and increase the credibility of the threat of force.¹⁰

Indeed, the future may not be too far away. Dedicated efforts have been made to realise network-centric military concepts. The US Navy's (USN) Co-operative Engagement Capability (CEC) and Sweden's Netdefense are among the more notable examples.¹¹

Challenges for the SAF

As we ponder the form which the future network-centric SAF should assume, we ought to critically examine some of the basic motivations, assumptions and implications of adopting NCW.

Should We Ride the Information Wave But Can We Afford Not To?

The information revolution is unlikely to bypass military activity while altering most forms of human activity. The conflict environment is thus changing in terms of opportunity for the SAF. The opportunity to gain significant warfighting advantage, coupled with the need to hedge against such gains by others, require that we seize the possibilities afforded, rather than be compelled to react to its effects later on.

Threats are also changing in terms of the tools employed. Today, state-of-the-art technology is driven increasingly by commercial imperatives. Many new weapons increasingly employ commercial-off-the-shelf (COTS) technology and "open" architectures. Advanced technology tools with military applications, such as secure communications, global positioning data, high-resolution earth observation satellites, and computing technology, are proliferating such that a future adversary¹² may possess presently-inaccessible capabilities. The challenge will be one of financial affordability rather than effective access denial.¹³

State-of-the-art, commercially available technology may provide adversaries adequate capability to compete with world-class military forces in a given region. In the SAF's case, the areas where we currently enjoy advantage - unit professionalism and operational readiness, currency of fielded technology, and high defence resources allocation - might in future be matched by an adversary's innovations.

That no adversary currently threatens our military advantage should not dull our senses. Even though the parameters of the information age landscape are still being charted, it is unmistakable that this trend will dominate and affect our future. To a considerable extent, we are therefore compelled to prepare for it.

Power to the People But What about Command and Control?

The "digitisation" of force headquarters, fighting platforms, soldiers, and the widespread use of automated battlefield information systems, are likely to challenge present paradigms on organisation and command and control (C²). The Army will be especially affected due to the typically numerous entities operating within a given area of operations.

Conventional wisdom views the military as a complex system, comprising numerous interacting parts functioning as a whole, and distinguishable from its surroundings by recognizable boundaries. This complex organization relies on unifying doctrine, training, SOPs, and a hierarchical command chain for consistency and efficiency in output.

The military, however, also possesses dynamic complexity, where the system's multiple parts can interact in an inconsistent manner.¹⁴ Under certain circumstances, the elements interact in a constantly changing fashion such that a particular input often yields an unpredictable output.

The introduction of widely distributed information systems¹⁵ is likely to increase the military's dynamic complexity by several orders of magnitude. When sub-units are given robots, unmanned platforms and improved weapons, plus great speed, agility and information saturation, we enter an entirely new realm of dynamic complexity. Knowledge, power, autonomy and decision-making are diffused downward throughout the system. Sub-elements down to the individual soldier will not only know more, but their ability to act on that knowledge is also greatly enhanced by increased resources and radius of action.¹⁶ Therefore, the consequences of their actions will be greatly magnified.¹⁷

Two potential effects of this enhanced dynamic complexity may be highlighted. First, when a highly digitised force enters the highly unstable and chaotic battlespace to confront an opposing complex organization, the potential for unpredictability increases in magnitude. Hence, an operation could yield an outstanding victory, or it could result in the total breakdown of command and control, fratricide and mission failure.

A second inevitable, but often unrecognised, effect is the diffusion of power, control and decision-making away from the top. According to one view, a successful network-centric force must possess a high ability for spontaneous self-organisation, adaptive behaviour and to thrive at the "edge of chaos".¹⁸ A military that traditionally depends on strong, hierarchical control may be forced to radically transform its force structure and C² mechanisms.

Can Information Dominance Really Dominate?

Three perspectives may be offered concerning the issue of information dominance.

First, in a network-centric environment, the side with information dominance can theoretically look inside the enemy's brain and "mess with his mind". The enemy's decision-cycle can be disrupted, misled and/or delayed while his moves can be pre-empted with precision targeting and counter-moves in the physical space. We will then enjoy "Visual-Blind" dominance, where we possess transparency but the enemy gropes in an opaque or confusing battlespace.¹⁹

However, NCW may not necessarily offer such a guarantee. A "Visual-Blind" advantage may possibly be gained in a conflict between a network-centric, high-tech military against a lower-tech adversary. Against an enemy with equal or greater information-based capabilities, however, a "Visual-Visual" conflict may result. Both sides may then target each other while attempting to deny transparency to each other. Advances in stealth technology, and its application to platforms and installations may also do much to foil information dominance. The battlespace can rapidly degenerate and become blurred and confusing. Dominant transparency becomes unattainable.

Hence, instead of complete, round-the-clock, information dominance and battlespace transparency, we may only hope for windows of relative dominance and transparency to open. An adversary may be rendered deaf, dumb and blind only temporarily, in certain locations, and for a certain time-frame. These opportunities have to be rapidly exploited for operational advantage.

Second, information dominance can possibly occur in the form of overload. Throughout history, key difficulties for the commander have included the timely receipt of accurate battlefield information and decision-making. Tomorrow's commanders may be overloaded with excessive information from every

imaginable source and in mind-numbing detail. Human decision-making processes degrade under stress and time compression. When overwhelmed by data, the human brain will undertake automatic filtering. Only a small subset of data will be considered, thereby affecting the decision-making process. The challenge is therefore to design a NCW system that takes into consideration the limits to human cognitive abilities.²⁰

From a third perspective, it may be argued that whatever advantages conferred by the information-rich, network-centric system are at best temporal. History is full of prophets who proclaimed that the latest weapon would be the final, pre-eminent "silver bullet" to defeat all other weapons or systems. Yet, counter-measures have inevitably appeared for every innovation or capability differential.²¹

In NCW, information will, more than before, be the lifeblood that courses through our future organization, and information will be the hub of the modern military's operational strength. The information network may therefore constitute a new centre of gravity in this age while posing the greatest vulnerability. An adversary may attempt to inject fog and friction into a network-reliant SAF. Examples include launching "semantic attacks" or "neocortical warfare".²² In developing a NCW system, network security, "anti-cyber-terrorism" and disaster recovery mechanisms therefore assume paramount importance.

The Need for Speed for Speed's Sake?

Whilst attempting to dominate the enemy's decision cycle through NCW, is there a danger of pursuing faster response time for its own sake? Against an adversary with less advanced IT architectures, the potential for miscommunication and misperception is huge. We may find ourselves acting so rapidly within the enemy's decision loop that we are largely prompting and responding to our own signals, which our beleaguered target cannot process. We could be like Pavlov's dog, ringing his own bell and wondering why he is salivating.

There is a need for sufficient speed of command to get inside our adversary's decision cycle, but too much speed turns a stimulus-response interaction into a self-stimulating frenzy. A simple scenario points to the irony:

- We rapidly emit signals to an adversary, who misses them, in part because of the strategic blindness we have inflicted upon him.
- Our target's lack of response is interpreted as signifying intent "X".
- We respond to perceived intent "X" with signal "Y" which also is missed by our target, who, perhaps, is struggling to interpret our earlier signals.
- Our target's response "Z" seems incomprehensible, or we assume it is a rejection of our previous signals.
- We therefore rapidly launch into actions "Z1", "Z2" and beyond.

One of NCW's great advantage is the high-speed processing and data distribution. This should translate into increased time for analysis and contemplation of appropriate responses, rather than knee-jerk reactions to speed up our response time. The goal may not be to shorten our decision-making loop, but to lengthen it, and, by doing so, improve it. Otherwise, we would merely be generating two sub-optimal decisions to his one reaction. Speed is not the essence here, only the means to an end.²³

Conclusion

From the above, it appears that the challenges before us are considerable. Two related recommendations may be offered to avoid buying the sizzle but not the steak. First, the developmental process must

necessarily involve rigorous debate, discovery, innovation, and experimentation amongst warfighters and defence scientists. Translating the promises of NCW into capability-enhancing reality for the SAF will not be easy. The challenge will be less technological but more the ability to reduce vulnerabilities and "unks"²⁴, synthesize emerging technologies, and integrate the sensor-shooter-information grids. In some instances, "legacy" systems, structures and processes may be upgraded; in others, radically new force structures and systems may be required. Throughout, the human must occupy the central position, with the systems and processes built for and around him.

The second is to strive towards complete interoperability amongst the warfighters.²⁵ Our network-centric forces must be able to readily "plug" into an integrated battlefield operating system, and forces will require interoperable communications, standards, doctrine, tactics and procedures. To optimise NCW's potential, it is necessary to foster and sustain an integrated professional culture. This requirement presents a continuing challenge to the SAF's service and joint training, and professional education programs. With lower components of the force assuming increasing importance in NCW, integration must extend downwards.

The queries raised merely represent a cursory sampling of the challenges confronting the SAF in developing NCW. They do not refute the potential advantages of NCW for the SAF; rather, they point to an almost self-evident conclusion: that the future holds as many vulnerabilities as opportunities. Given the historical experiences of Singapore and the SAF, this challenge is not entirely new to us. As we continue to balance forward-looking visioning with "boots-on-the-ground" pragmatism, we can realise the technological opportunities, and gain both the sizzle and the steak.

Endnotes

1 Dennis C. Blair, "Change is Possible and Imperative", in *US Naval Institute Proceedings*, May 2001, Vol.127, Issue 5, p.46.

2 Speed of Command is the process by which a superior information position is turned into a competitive advantage. It is characterized by the decisive altering of initial conditions, the development of high rates of change, and locking in success while locking out alternative enemy strategies. It recognizes all elements of the operating situation as parts of a complex adaptive ecosystem and achieves profound effect through the impact of closely coupled events. See Arthur K. Cebrowski & John J. Garstka, "Network-Centric Warfare: Its Origin and Future", in *US Naval Institute Proceedings*, Jan 1998, Vol.124, Issue 1, p.35.

3 Self-Synchronization is the ability of a well-informed force to organize and synchronize complex warfare activities from the bottom up. The organizing principles are unity of effort, clearly articulated commander's intent, and carefully crafted rules of engagement. Self-synchronization is enabled by a high level of knowledge of one's own forces, enemy forces, and all appropriate elements of the operating environment. It overcomes the loss of combat power inherent in top-down command directed synchronization characteristic of more conventional doctrine and converts combat from a step function to a high-speed continuum. See *ibid*.

4 J.R. Wilson, "Network-Centric Warfare Marks the Frontier of the 21st Century Battlefield", in *Military & Aerospace Electronics*, Jan 2000, Vol.11, Issue 1, p.13.

5 See J.R. Wilson, *op cit*, pp.14-15; Edward A. Smith Jr, "Network-Centric Warfare What's the Point?", in *Naval War College Review*, Winter 2001, Vol.54, Issue 1, pp.59-60.

6 See Walter Morrow, "Technology for a Naval Revolution in Military Affairs", *Second Navy RMA Round Table*, Science Applications International Corporation, Tysons Corner, Virginia, 4 June 1997.

7 The OODA loop theory was developed by John Boyd, a US Air Force fighter pilot during the Korean War (1950-53), to describe the psychological dimensions of the decision-making process. See John R. Boyd, *A Discourse on Winning and Losing*, (Alabama: Air Univ. Press, 1987); Arthur K. Cebrowski, "Network-Centric Warfare: A Revolution in Military Affairs," presentation to *The 1997 Technology Initiatives Game*, 8 September 1997.

8 Wilson, J.R., *op cit*, p.14.

9 David Gompert "National Security in the Information Age", *Naval War College Review*, Autumn 1998, pp. 29-30; Arthur K. Cebrowski and John J. Garstka, *op cit*, p. 32.

10 William K. Lescher, "Network-Centric: Is It Worth The Risk?" in *US Naval Institute Proceedings*, May 1999, Vol.125, Issue 5, pp.58-59.

11 CEC is regarded not merely as the enabler that will link the entire US "sensor-to-shooter" chain, but is intended to give the US a quantum leap in its ability to achieve "full spectrum dominance" in any theatre of war. CEC networks and "fuses" multiple sensors on different platforms via high-speed, jam-resistant data-links to present a seamless set of tactical imagery to everybody in the network. In time, CEC will be expanded to connect shipboard, ground-based and airborne sensors into the same integrated sensor network to "joint" warfighters.

By merging data from different sources and offering everyone exactly the same picture, the USN gets markedly improved track accuracy against enemy threats to the fleet. It also helps to reduce the fog of war and permits efficient target engagement. Gone will be the days when multiple platforms focused on the same threat, allowing others to slip through the net unnoticed. CEC increases the battlespace area, giving warfighters more time to make a decision and to be predictive about enemy activity. It also extends engagement flexibility and ranges and remains all but immune to heavy jamming.

Like CEC, Sweden's Netdefense is aimed at plugging every Swedish weapons platform into an Internet-based command and control (C2) system by 2010. The system will be based on five "capability pillars". The first is cyberspace itself. The second is an "awareness system" that will feed multi-spectral data into the network around the clock. Sources will come from multiple netted airborne, land-based and seaborne sensors in and around Sweden. The third pillar is a database that will list Sweden's own capabilities, and automatically allow selected access to them, "a kind of catalogue, yellow pages and authentication system rolled into one," according to the developers. The fourth is "decision support", an advanced man-machine interface tool for users, from government leaders to front-line troops, to visualise the battlespace. The final pillar is a response system to undertake precision attacks once the threat has been identified and prioritised. See Nick Cook, "Network Centric Warfare - The New Face of C⁴I", *Interavia Business & Technology*, Feb 2001, Vol.56, Issue 650, pp.38-39.

12 A potential adversary may be a state, sub-state, non-state or trans-national actor.

13 David Gompert "National Security in the Information Age", *Naval War College Review*, Autumn 1998, p. 31; William K. Lescher, *op cit*, pp.59-60.

14 The degree of dynamic complexity is a function of the number of parts in a system (such as an organisation), and of the ability of those components (in this case headquarters, sub-units, and individual soldiers) to communicate with each other laterally and vertically, and to act in an adaptive manner. See Thomas K. Adams, "The Real Military Revolution", in *Parameters: US Army War College*, Autumn 2000, Vol.30, Issue 3, p.56.

15 The US Army's Force XXI project, for example, is seeking to create an unprecedented degree of interconnectivity in an organization as large and diverse as an army. The Land Warrior component is very important because it carries this distribution to its ultimate degree by including individual soldiers. See Pat Towell, "Boots On The Ground, Eyes On The Future", in *CQ Weekly*, 8 Aug 1998, Vol.56, Issue 32, pp.2160-66; Keith Naughton, Jamie Reno & N'Gai Croal, "Lock and Download", in *Newsweek*, 22 Oct 2001, Vol.138, Issue 17, p.61.

16 Increased resources will be in terms of more capable weapons and readily available on-call fires while increased radius of action will be in terms of increased range and agility.

17 Eliot A. Cohen, "At Arms", in *National Review*, January 2000, Vol.52, Issue 1, pp.26; Thomas K. Adams, *op cit*, p.57; Lawrence Freedman, *The Revolution in Strategic Affairs*, Adelphi Paper 318, The International Institute for Strategic Studies, (NY: Oxford University Press, 1998), p.61.

18 Thomas K. Adams, *op cit*, p.57.

19 For a more in-depth discussion about "Visual-Blind" and "Visual-Visual" conflicts, see John W. McDonald, "Exploiting Battlespace Transparency: Operating Inside an Opponent's Decision Cycle", in Robert L. Pfaltzgraff, Jr & Richard H. Shultz, Jr (ed), *War In the Information Age: New Challenges for US Security Policy*, (Washington: Brassey's, 1997), pp.143-168.

20 Alan D. Zimm, "Human-Centric Warfare", *US Naval Institute Proceedings*, May 1999, Vol.125, Issue 5, p.30; Anthony J. Russo, "Leadership in the Information Age", *Military Review*, May-Jun 1999, Vol.79 No.3, p.79.

21 Different prophets in different ages have declared the chariot, the stirruped cavalryman, the crossbow, the gunpowder firearm, the field artillery, the machine gun, the airplane, the tank, the atomic bomb, etc, as the absolute, decisive and final weapon system(s) to dominate the battlefield. See Colin S. Gray, *Explorations in Strategy*, (Westport: Greenwood Press, 1996), p.240; Anthony Coroalles, "On War in the Information Age: A Conversation with Carl Von Clausewitz", in *Army*, May 1996, pp.34-5.

22 "Semantic attacks" allow an external agent to manipulate a system and the information that appear to insiders to be working normally. For example, misleading signals could be sent through the network to alter perceptions, or false orders might be delivered to key units. "Neocortical warfare" focuses on enemy minds rather than capabilities. It involves the attempt to control or shape the behaviour of enemy organisms, but without destroying the organisms. See Lawrence Freedman, *op cit*, p.56; Richard Szafranski, "Neocortical Warfare? The Acme of Skill", in *Military Review*, Nov 1994, Vol.74, No.11, pp.41-55.

23 Thomas P.M. Barnett, "The Seven Deadly Sins of Network-Centric Warfare", *US Naval Institute Proceedings*, Jan 1999, Vol.125, Issue 1, p.40.

24 An "unk" is a colloquial term referring to the "unknown".

25 Warfighters could include not only soldiers who operate in the physical sphere but also the "cyberwarriors" who operate in cyberspace, engaging in information and electronic warfare.

Bibliography

Adams, Thomas K., "The Real Military Revolution", in *Parameters: US Army War College*, Autumn 2000, Vol.30, Issue 3.

Barnett, Thomas P.M., "The Seven Deadly Sins of Network-Centric Warfare", *US Naval Institute Proceedings*, Jan 1999, Vol.125, Issue 1.

Blair, Dennis C., "Change is Possible and Imperative", in *US Naval Institute Proceedings*, May 2001, Vol.127, Issue 5.

Boyd, John R., *A Discourse on Winning and Losing*, (Alabama: Air Univ. Press, 1987).

Cebrowski, Arthur K., & Garstka, John J., "Network-Centric Warfare: Its Origin and Future", in *US Naval Institute Proceedings*, Jan 1998, Vol.124, Issue 1.

Cebrowski, Arthur K., "Network-Centric Warfare: A Revolution in Military Affairs," presentation to *The 1997 Technology Initiatives Game*, 8 September 1997.

Cohen, Eliot A., "At Arms", in *National Review*, January 2000, Vol.52, Issue 1.

Cook, Nick, "Network Centric Warfare - The New Face of C⁴I", *Interavia Business & Technology*, Feb 2001, Vol.56, Issue 650.

Coroalles, Anthony, "On War in the Information Age: A Conversation with Carl Von Clausewitz", in *Army*, May 1996.

Freedman, Lawrence, *The Revolution in Strategic Affairs*, Adelphi Paper 318, The International Institute for Strategic Studies, (NY: Oxford University Press, 1998).

Gompert, David, "National Security in the Information Age," *Naval War College Review*, Autumn 1998.

Gray, Colin S., *Explorations in Strategy*, (Westport: Greenwood Press, 1996).

Lescher, William K., "Network-Centric: Is It Worth The Risk?" in *US Naval Institute Proceedings*, May 1999, Vol.125, Issue 5.

McDonald, John W., "Exploiting Battlespace Transparency: Operating Inside an Opponent's Decision Cycle", in Pfaltzgraff, Jr, Robert L.; & Shultz, Jr, Richard H., (ed), *War In the Information Age: New Challenges for US Security Policy*, (Washington: Brassey's, 1997).

Morrow, Walter, "Technology for a Naval Revolution in Military Affairs", *Second Navy RMA Round Table*, Science Applications International Corporation, Tysons Corner, Virginia, 4 June 1997.

Naughton, Keith; Reno, Jamie; & Croal, N'Gai, "Lock and Download", in *Newsweek*, 22 Oct 2001, Vol.138, Issue 17.

Russo, Anthony J., "Leadership in the Information Age", *Military Review*, May-Jun 1999, Vol.79 No.3.

Smith Jr, Edward A., "Network-Centric Warfare What's the Point?", in *Naval War College Review*, Winter 2001, Vol.54, Issue 1.

Szafranski, Richard, "Neocortical Warfare? The Acme of Skill", in *Military Review*, Nov 1994, Vol.74, No.11.

Towell, Pat, "Boots On The Ground, Eyes On The Future", in *CQ Weekly*, 8 Aug 1998, Vol.56, Issue 32.

Wilson, J.R., "Network-Centric Warfare Marks the Frontier of the 21st Century Battlefield, in *Military & Aerospace Electronics*, Jan 2000, Vol.11, Issue 1.

Zimm, Alan D., "Human-Centric Warfare", *US Naval Institute Proceedings*, May 1999, Vol.125, Issue 5.



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Rethinking Western Vulnerabilities to Asymmetric Warfare

by CPT Frederick Teo Li-Wei

Recent events have sparked renewed interest in the subject of asymmetric warfare. The Economist was not completely wrong to point out that the world changed on 11 September 2001. However, the events of that fateful day were not a turning point in international relations. Rather, they were the most visible and devastating signs of ongoing changes in the world that have profound implications on the way we perceive our security.

It is therefore wrong to see asymmetric warfare as a new development, even though "asymmetric warfare" has only become a preoccupation for both Western military planners as well as academic commentators in the last few years. Such concerns were comprehensively articulated as early as the 1997 US Quadrennial Defense Review.¹ This paper will provide an analytical framework to examine the concept of asymmetric warfare before critically examining whether Western vulnerabilities to asymmetric coercion have been over-exaggerated.

Placing Asymmetric Warfare in Context

"In general, in warfare what is referred to as the 'unorthodox' means attacking where the enemy is not prepared and going forth when they do not expect it. In this fashion you will be victorious."

~ Anonymous, *One Hundred Unorthodox Strategies*:

Battle and Tactics of Chinese Warfare

To analyse asymmetric warfare, it is vital to place it within a proper context. Militaries have always attempted to seek asymmetric advantages so as to inflict maximum damage to the enemy at minimum cost. Asymmetric strategies are especially favoured by the weak because they tend to offset the conventional superiority of their opponents. Sun Tzu, himself, noted that in general, one engages in battle with the orthodox and "gains victory through the unorthodox".²

However, asymmetric warfare has taken on a new relevance today. Opponents are increasingly willing to employ "the unorthodox" in battle as well. This is because conflicts today tend not to be total wars; they tend to have complex causes and manifest themselves in small wars, low-intensity conflicts (LICs) or sub-national conflicts.

In a situation of more limited political and strategic objectives, the means associated with conventional wars of the past appear inappropriate. Therefore, both states and non-state actors are increasingly employing unconventional means as these will prove less politically costly and more unlikely to provoke a massive conventional response from the adversary and the international community. Such means might include terrorism, economic sanctions, information operations and so on.³

What Is Asymmetric Warfare?

A conflict can be termed asymmetric when either the political/strategic objectives of opponents are asymmetric or when the means employed are dissimilar.

- **Asymmetries in Political/Strategic Objectives**

Asymmetric strategies are often a result of asymmetries in political and strategic objectives. For example, Milosevic's political objective during the Kosovo war was not to defeat NATO but to prevent NATO from defeating him. As a result, he did not need to launch a conventional military operation against NATO. Instead, the Serbs relied on information warfare to frustrate NATO's political objectives and to fragment the Alliance's unity in a bid to minimise the military damage NATO can cause.

- **Asymmetries in Strategy**

Asymmetric warfare can also result from one side engaging the opponent in a form, and/or at an intensity, which the enemy is unable or unwilling to resist. The Vietnam War was a good example of both. *Asymmetries in form* were observed when the North Vietnamese employed Truong Chinh's strategy of "interlocking", i.e. a mixture of both conventional and guerrilla operations, against the American strategy of conventional military operations.⁴

Imbalances of resolve result in *asymmetries in intensity*, expressed either as a willingness to endure a different degree of violence and/or as a willingness to inflict a different degree of violence. Professor Lawrence Freedman pointed out that "a balance of resolve must be set against a balance of military power" in order to make sense of strategic outcomes.⁵ During the Vietnam War, Ho Chi Minh apparently said that he would be victorious even if he were to lose ten men for every single American soldier. It was not a boast. Rather, he was espousing the distinctive Vietnamese world-view based on an essential Buddhist proposition - that all existence "consists entirely of suffering".⁶ Therefore, despite suffering only 43,000 casualties compared to over a million North Vietnamese casualties, the US withdrew from Vietnam.

- **Characteristics of Asymmetric Strategies**

Strategies exist along a continuum of symmetry in relation to their opponents.⁷ While the term "asymmetric strategy" logically suggests that it must be understood in relation to another strategy, at a practical level, it is more useful to understand "asymmetric" as synonymous with "unconventional". In this regard, it is possible to identify some general characteristics of asymmetric strategies.

First, asymmetric strategies seek to exploit key vulnerabilities of the enemy. Such vulnerabilities tend not to be appreciated (e.g. simmering resentment in minorities) or else are unable to be rectified (e.g. the volatility of public opinion in liberal democracies). Indeed, the asymmetric character of such threats contribute to their not being appreciated.⁸

Second, asymmetric strategies are highly suited for strategic competition between states in the absence of all-out war because they may be employed not only during the violent phases of a conflict but during any phase of the conflict.

Third, the actual agents behind asymmetric threats cannot always be identified, especially when future adversaries could be non-state actors. For example, the planting of a computer virus (such as the ILOVEU virus which plagued computers world-wide in May 2000) could be virtually imperceptible until the damage is done.

Fourth, it is difficult to counter asymmetric threats. Deterrence requires known opponents. Richard Betts made the point that "retaliation requires knowledge of who has launched an attack and the address at which they reside."⁹ When hostile acts cannot be attributed, deterrence fails. Even if preparations to react against asymmetric attacks could be made, the costs are likely to be prohibitive.

Explaining Western Vulnerability

"Thus it is said that one who knows the enemy and knows himself will not be endangered in a hundred engagements."

~ Sun Tzu, *The Art of War*.

When Sun Tzu used the term "knows", he meant a holistic understanding of the "thought processes and value systems of both the leadership and general population of an adversary and the interaction, if any, between the 'leaders' and the 'followers'."¹⁰ This part of the paper seeks to "know" the West in order to explain its vulnerability to asymmetric coercion.

Given the predominance of the US military and the leading role it plays in Western security organisations such as NATO, the Western way of war has become, for most intents and purposes, the American way of war.¹¹ The hallmark of this war tradition has been the focus on destroying the enemy's military capacity. This tradition has deep roots.

Clausewitz and the Enlightenment Tradition

Victor Hanson argues that the Western democratic heritage and the concept of "decisive battle" are closely related and can be traced back to the Greek Phalanx warfare of the 5th century BC. This style of warfare favoured closing in with the enemy for a short and decisive engagement that would determine the outcome. He makes the point that such a heritage has developed in the West a "repugnance for hit-and-run tactics, for skirmishing and ambush."¹² This repugnance led to an inability to understand and cope with the unconventional ways of war in Vietnam and elsewhere.¹³

The US also appears unable to understand why so many states stand ready to oppose American power by force. The influence of Clausewitz, whom Russell Weigley considered to be the central influence on US military strategy, is largely to blame because Clausewitz saw war as a rational exercise, a "continuation of political intercourse, carried on by other means."¹⁴ Therefore, the West has been unable to understand other motivations for war. As M. Borchev observed, "wars as an independent social and historical phenomenon are not always connected with armed struggle, their aims vary as well as types of violence and struggle."¹⁵ Indeed, John Keegan points out that,

*"it is at the cultural level that Clausewitz's answer to his question, 'What is war?', is defective [W]ar embraces much more than politics: that it is always an expression of culture, often a determinant of cultural forms, in some societies the culture itself."*¹⁶

The Clausewitzian influence has also resulted in the West underestimating threats of a non-military nature. The West is still in the process of broadening its definition of security.¹⁷ Others have long taken a more comprehensive approach to their security.¹⁸

The rational Clausewitzian paradigm is also unable to account for why militarily weaker states would want to challenge the United States and other Western states. Only by considering factors such as cultural estimations can one make sense of such asymmetric wars. In his study of such wars, Michael Fischerkeller argues convincingly that

*"[a] weaker state's judgement of the target as culturally inferior results in a discounted capability evaluation of the quantitatively superior enemy. Viewing itself as culturally superior to its rival, the weaker state is encouraged to sound the trumpets for war when its quantitative inferiority seems to call for a more cautious policy."*¹⁹

The West's failure to achieve a comprehensive understanding of its adversaries led to strategic surprises. As Jan Jandora pointed out, the US appeared surprised by Iraq's 1990 invasion of Kuwait because it did not understand the fundamental conditions of that relationship.²⁰

This weakness may also now doom American efforts to fight terrorism. It may learn something from Fouad Ajami who wrote about the more fundamental causes of terror against the US. He noted that the Arab world "lacking the tools and the political space for free inquiry fell back on anti-Americanism. the fury with which the intellectual and political class railed against the United States and Israel, the agitated were speaking to and of their own rulers."²¹

Social Change

Moreover, social changes have also led to greater vulnerability to asymmetric coercion. Edward Luttwak believes the West is in what he calls a "post-heroic" age where "the prospect of high casualties, which can rapidly undermine domestic support for any military operation, is the key political constraint when decisions must be made on which forces to deploy in a crisis and at what levels."²² As Michael Mandelbaum explains through a powerful analogy:

*"The way the wars were officially remembered also reflects the shift. The style of war memorials from the nineteenth century through 1945 tended towards the heroic: statues of commanders on horseback or, in the case of one such monument in Washington DC, the fighting men engaged in the heroic and symbolically powerful act of planting the American flag on the Pacific Island of Iwo Jima. By contrast, the Vietnam Memorial, a series of stark slabs of black marble with the names of all the US war dead engraved on them, represents the soldier not as hero, but as innocent and all but anonymous victim."*²³

Democratic and Liberal Institutions

Democratic institutions in Western liberal democracies have been a cause of vulnerability to asymmetric coercion. First, wars in democracies must not only be fought but must also be sold. However, sustaining public opinion over a long period of time is not easy and is therefore susceptible to asymmetric information operations. This explains the imperative of low casualties and quick exit.²⁴

Second, diffused decision-making processes in democracies hamper the formulation of coherent strategy. This problem is particularly acute in the US because its political system is characterised not so much by a separation of powers but by separate institutions sharing powers: while the President is notionally the Commander-in-Chief, it is Congress that feeds and sustains the military, a point which is often overlooked.²⁵

As a result, there are multiple sources of influence over the direction of policy. Dean Acheson, US Secretary of State during the Korean War, condemned congressional "interference" saying that "in the conduct of their foreign relations, democracies appear to me decidedly inferior to other governments."²⁶ Andrei Gromyko, the Soviet Foreign Minister said in 1975 that the Americans "mistake tactics for strategy" and that the "absence of a solid, coherent, and consistent policy is their big flaw."²⁷ This lack of strategic coherence makes sustaining coalition unity and public opinion more vulnerable to asymmetric coercion.

Third, bureaucratic politics play an important role in influencing the Western style of war-fighting. Civil-military tensions exist in democracies at the strategic level. Civilian politicians want flexibility in setting the goals and end-states so as to avoid limiting their options in conflicts where the strategic political landscape changes rapidly. However, military officers appreciate clear and consistent directions from their political masters so as to best align military strategy with national objectives.²⁸ Therefore, Western democracies may display a lack of consistency in their use of military force. Asymmetric strategies can target such differences as vulnerabilities.

Fourth, the transparency of decision-making processes and openness of Western society in general makes it easy for potential enemies to discern asymmetric vulnerabilities clearly. Given the ready availability of

information and commentary, it is easy to understand what the Western leadership and civilian population think and perceive, what they hold dear, and what is not valued.

Fifth, Western democracies have to balance a strong normative regard for legitimacy, and a professed adherence to the rule of law. This dilemma has become very pronounced in an increasingly complex globalised world. A belief in the legitimacy of an international norm and observance of the norm does not imply that the state is "law-abiding". As Ian Hurd pointed out, often the opposite is true: "a normative conviction about legitimacy might lead to *noncompliance* with laws when laws are considered in conflict with the conviction."²⁹ Mary Kaldor argues that in a globalised world, attachment to legalistic Westphalian concepts like sovereignty will have little value and that establishing legitimacy is a more crucial activity.

While Western nations have recognised the importance of legitimacy, they seem not to recognise the paradox between the values they champion and the way they fight, especially on humanitarian missions. This paradox opens the door for potentially very damaging asymmetric information operations because the very moral legitimacy they seek is undermined when they, for example, refuse to put their own troops at risk. As Michael Ignatieff observes, "[t]he concept of human rights assumes that all human life is of equal value. Risk-free warfare presumes that our lives matter more than those we are intervening to save."³⁰ But the West has consistently lacked moral and ethical dilemmas in their narratives. Vinod Anand pointed out that the merciless Allied raids on German and Japanese cities during World War II, and the atomic bombings of Hiroshima and Nagasaki raised few, if any, moral problems for the West. As if to confirm this, General Norman Schwarzkopf, commenting in an interview on Iraqi casualties, suggested that the numbers did not really matter: "50,000 or 100,000 or 150,000 or whatever of them to be killed."³¹

Technology

Technology has also ironically increased Western vulnerability to asymmetric threats. First, technological advances have led to a "can-implies-ought" problem. Precision guidance technology obliges us to avoid collateral damage while stand-off capabilities reduce our willingness to send soldiers into danger. These new, sometimes unrealistic, expectations can be exploited.

Second, technological advances have changed the way society organises itself. This has an impact on the military. Alvin and Heidi Toffler believe that nations make war the same way that they make wealth. The US military seems to agree.³² Businesses today leverage on technological advances in communications and the internet to organise themselves more synergistically as networks rather than as hierarchies.³³ The very same technologies powering business networks are also helping militaries to make a "fundamental shift from platform-centric to network-centric warfare".³⁴ However, such capabilities also rely on an increasingly sophisticated infrastructure that is vulnerable to disruption and subversion. The most networked and media-savvy societies are also those where asymmetric information operations have greatest effect.

Perhaps the most enduring icon of civilian suffering in recent times must be the Pulitzer Prize-winning photograph by Nick Ut of a young Vietnamese girl, Kim Phuc, running away from a napalm bomb attack.³⁵ Such images have a strong influence on the outcomes of the war: "for the first time in modern history, the outcome of a war was determined not on the battlefield but on the printed page and, above all, on the television screen."³⁶

Rethinking Western Vulnerabilities

All states, including Western democracies, are vulnerable to asymmetric threats if what we mean by vulnerability is merely that someone can, for example, successfully carry out a terrorist act. However, if we are to understand true vulnerability as easily yielding to the adversary's political/strategic intent, then it does not necessarily follow that the West will always succumb to asymmetric challenges. The response to the terrorist attacks on September 11 vindicates this.

Winning the Media War

It seems self-evident that the West is susceptible to media manipulation. During the Kosovo War, Jonathan Eyal, director of studies at the Royal United Services Institute (RUSI), noted that Milosevic's "only chance of success was in breaking Allied solidarity, and that could only come about if Belgrade won the media war."³⁷ And it would appear that the Serbs nearly got it right. As Belgrade residents took to keeping nightly vigils on bridges and Serb television showed babies on incubators without power, cracks within NATO appeared despite the public show of unity. The British, for example, did not take part in the bombing of Serb television assets and the power grid because they believed that these operations constituted potential violations of the Geneva conventions. Similarly, the French refused to bomb the bridges in Belgrade and managed to dissuade other allies from attacking all of them.³⁸

However, the West has also become a lot more savvy about fighting media wars. In 1991, Colin Powell terminated combat operations before destroying Iraq's Republican Guard. The American media had apparently obtained pictures of the carnage along the so-called "highway of death". Powell was haunted by his own personal Vietnam experience; his second tour in Vietnam began in 1968 soon after a platoon in his brigade committed the notorious My Lai massacre. He explained later that "[w]e did not need another situation where a large number of civilians were killed with Peter Arnett [from CNN, who made his reputation in Vietnam] all over the place."³⁹

Powell belongs to a new generation of US officials who are sensitive to the effects of the media. As a result, few gruesome pictures of war were available to the press under pool restrictions during the Gulf War. Of the 1,104 Operation Desert Storm photographs in America's three major newsmagazines, only 38 showed actual combat activity while 249 were noncombat, "catalogue-style pictures that included images from the Department of Defence and arms manufacturers of the Allied military hardware". When officers, on a rare occasion, did allow reporters to see some terrified young Iraqis being ripped apart by an Apache helicopter, the video was quickly removed from circulation. A senior Pentagon official explained: "If we let people see that kind of thing, there would never again be any war."⁴⁰ This increased media consciousness has led to real changes in the way the military operates in order to mitigate the negative effects of the mass media.⁴¹

Western societies are also well-placed to fight and win media wars for two main reasons. First, most major real-time news networks (CNN, BBC World, MSN-CNBC) are Western. These companies have helped to present information to international audiences in a manner that is at least not prejudicial to Western democracies. As Keohane and Nye have noted, "when Iraq invaded Kuwait in 1990, the fact that CNN was an American company helped to frame the issue, world-wide, as aggression. Had an Arab company been the world's dominant TV channel, perhaps the issue would have been framed as a justified attempt to reverse colonial humiliation."⁴²

Second, due to the transparency of institutions in Western democracies, information from the West is perceived to be more credible. In this information-saturated age,

"Credibility is the crucial resource, and asymmetrical credibility is a key source of power. Establishing credibility means developing a reputation for providing correct information, even when it may reflect badly on the information provider's own country."⁴³

The BBC's authority in news broadcasting is built precisely on this deeply held sense of impartiality. For example, during the Falklands War, BBC veteran Peter Snow was criticised in Parliament for qualifying the information given by the British government with sceptical phrases like "if we are to believe the British". The West should be better able to dominate the interpretation of facts because "political struggles focus less on control over the ability to transmit information than over *the creation and destruction of credibility*."⁴⁴

The Presumption of Zero Casualty Tolerance

In November 1990 during preparations for Desert Storm, a Sunday Telegraph journalist Frank Johnson wrote,

"In America's attitude to the prospect of war, there is something deeper at work. Perhaps the United States is no longer fitted for the part of global power, because it now regards death as an unacceptable decline in an American's standard of living."⁴⁵

Nevertheless, Western aversion to casualties should not be taken for granted. Two key variables influence the level of tolerance in Western publics: leadership and threat perception.

Leadership is crucial in mobilising the public to accept costs. Having just concluded WWII, the American people initially did not like the idea of giving Marshall Aid. Nevertheless, Truman and Nixon sold the idea to their colleagues and to the people. Today, leaders no longer lead in crises, they manage. Without strong leadership and clearly articulated objectives, it is no wonder that support is frequently uncertain. The leaders themselves may have underestimated the level of support they actually command. For example, the American public was consistently willing to accept tens of thousands of casualties during the Gulf War.⁴⁶

The personality of the leaders involved in making decisions also have an impact on the willingness of publics to endure casualties. When the then-president George Bush led an Allied coalition into battle, his credibility as Commander-in-Chief was unquestioned given his past military record. President Bill Clinton, however, came into the job labelled as a "draft dodger".

In addition to this initial disadvantage, there were several instances when President Clinton's decision to use the military was not entirely beyond reproach. As Gregory R. Copley noted, the "fact that the August 20 strikes [against targets linked to Osama Bin Laden in Afghanistan and the Sudan] were openly and derisively called *Operation Monica* around the Washington national security community shows the extent of cynicism about Presidential motives with regard to this issue."⁴⁷

Tolerance of casualties also depends on the public's threat perception. In the past decade where there was an absence of an overwhelming threat to national survival, it is not difficult to understand the West's unwillingness to endure casualties. However, events of the recent months have shown that public opinion can be very robust when the threat becomes real.

Asymmetric Strategies are Uncommon

Asymmetric strategies are not the norm in inter-state conflicts. The strength of symmetric strategies such as conventional military operations are proven and understood. This is the reason why conventional armed forces still take up the bulk of defence resources in most countries. Moreover, as long as potential enemies possess conventional military capabilities, there will always be a need to deter and defend against them in a similar way. States will, therefore, never rely exclusively on asymmetric strategies in the conduct of military affairs.

Furthermore, the effects of asymmetric operations are ambiguous. For example, one cannot be certain of how much public support can be eroded through negative information-media operations. In fact, asymmetric operations may sometimes have little strategic consequences. Osama's terror attacks have not weakened US involvement in the Middle East. They have in fact concentrated the minds of American policy-makers on the need to push through a political settlement in the unstable region so as to erode the underlying causes of terror and religious fanaticism.

Therefore, when used by states, asymmetric strategies are more likely to be deployed alongside conventional capabilities in order to enhance the latter's overall effectiveness and to provide more choices for policy-makers. Even the West is capable of responding asymmetrically to potential adversaries. Some asymmetric challenges, such as media warfare, can turn out to be double-edged swords: while images of Western casualties may erode public support for military action, it may also fuel a desire for retribution and revenge.

Conclusion

"Subjugating the enemy's army without fighting is the true pinnacle of excellence."

~ Sun Tzu, *Art of War*.

This famous quotation of Sun Tzu's has led many to keep searching for silver bullets to defeat potential adversaries. Some might be tempted to look at asymmetric strategies as potential silver bullets in future wars. However, predictions about future wars always tend to be upset by "unk-unks" - unknown unknowns. Developing strategic analytical capabilities will prove vital in both dealing with and in employing asymmetric strategies. After all, the highest realisation of warfare is to attack the enemy's plans, not his soldiers and you cannot know the enemy's plans unless you understand the enemy himself.⁴⁸

This paper contains examples showing how effective asymmetric strategies can be. In fact, it has become something of a cottage industry to speculate on what such future asymmetric threats will be and this industry will only grow in the wake of the September 11 attacks. However, the West's vulnerability to asymmetric coercion should not be taken for granted.

But just as it would be wrong to assume that asymmetric strategies will always be effective against the West, it would also be reckless to assume that adversaries will not challenge the West symmetrically through conventional military combat. After all, enemies of the US are not all Islamic fanatics hiding in caves. States such as Iraq continue to pose a serious conventional threat.

Even though numerous volumes speak of the conventional superiority of the West, the West may no longer have the stomach to fight a major conventional war. Michael Mandelbaum noted that,

"Warlessness is the product of developments that have their origins in the West over the last 200 years and that have gained in strength in recent decades [it] is not the result of any single thing. It is a consequence of many things characteristic of Western societies at the end of the 20th century."⁴⁹

Indeed, the 'debellicisation' of the West makes conventional symmetric strategies attractive to adversaries. As Professor Freedman noted, "to act as if force had no utility for us creates utility for our potential enemies."⁵⁰ The practice of war, once the prerogative of the strong of the international system, "is instead increasingly the tactic of the weak".⁵¹ The more the West shows a disdain for violence, the more violence it will invite upon itself. Potential peer competitors like China are already devising doctrines and strategies to challenge the US in a major conventional military conflict.⁵² Contrary to Mandelbaum's conclusion, major wars may not be obsolete after all. Such wars may prove to be the greater challenge for the West in the longer term.

Endnotes

1 Office of Secretary of Defense (1997): Section 2. The paper stated, "U.S. dominance in the conventional military arena may encourage adversaries to use such asymmetric means to attack our forces and interests overseas and Americans at home. That is, they are likely to seek advantage over the United States by using unconventional approaches to circumvent or undermine our strengths while exploiting our vulnerabilities. Strategically, an aggressor may seek to avoid direct military confrontation with the United States, using instead means such as terrorism, NBC threats, information warfare, or environmental sabotage to achieve its goals. If, however, an adversary ultimately faces a conventional war with the United States, it could also employ asymmetric means to delay or deny U.S. access to critical facilities; disrupt our command, control, communications, and intelligence networks; deter allies and potential coalition partners from supporting U.S. intervention; or inflict higher than expected U.S. casualties in an attempt to weaken our national resolve.

2 Sun Tzu (1993) : 165.

3 It is important to note at this early juncture that asymmetric warfare does not exclude military means employed in an asymmetric fashion.

4 Johnson (1998): 93. The "war of interlocking" is an awkward English transliteration of the French *guerre en dents de peigne*.

5 Freedman (1998-99): 42.

6 Johnson (1998) : 89.

7 Bennett, Twomey and Treverton (1999): 5.

8 *Ibid* : 2.

9 Betts (1998) : 34.

10 Ullman & Wade (1998) : 14.

11 Unless otherwise stated, the two are taken to be synonymous in this paper.

12 Hanson (2000): p13.

13 There is certainly a touch of irony here considering that the Americans were themselves the guerrillas during their War of Independence.

14 Clausewitz (1989) : 87.

15 Cited in Gulin (1997) : 17.

16 Keegan (1994) : 11-12.

17 See Ullman (1983), Mathews (1989) and Rothschild (1995).

18 See Ball (1993): 16-18 and Thakur (1997). The Japanese government first adopted the concept of "comprehensive security" as the basis of national security planning in the late 1970s. Indonesia still relies on its strategic concepts of *Ketahanan Nasional* (*Tannas*, or "national resilience") and *Wawasan Nusantara* ("archipelagic outlook") which translates into the military system of *hamkamrata* ("total people's defence"). Singapore, in turn, has formulated its version of *Total Defence* which comprises five distinct elements: psychological defence, social defence, economic defence, civil defence and military defence.

19 Fischerkeller (1998) : 3.

20 For elaboration, see Jandora (1999) : 550.

21 Ajani (2001) : 9. Such behaviour is in accord with the Arabic maxim that goes: "I talk to my daughter-in-law so my neighbour can hear me".

22 Luttwak (1996): 36.

23 Mandelbaum (1998-99) : 24.

24 FM 100-5 (1997) : Ch. 1 p. 3. US Army Operational Doctrine states that the "American people expect decisive victory and abhor unnecessary casualties. They prefer quick resolution of conflicts and reserve the right to reconsider their support should any of these conditions not be met".

25 See Pearlman (1999).

26 Quoted in *ibid* : 10.

27 Quoted in *ibid* : 394.

28 Pearlman (1999) : 10.

29 Hurd (1999) : 381.

30 Ignatieff (2000) : 162.

31 Anand (1999) : 277.

32 See Cebrowski & Garstka (1998).

33 The logic behind adopting a network form of organisation to create a "system of systems" is articulated by Metcalfe's Law, the proposition that the "power" of a network is proportional to the square of the number of nodes in the network. The "power" or "payoff" of network-centric computing comes from information-intensive interactions between very large numbers of heterogeneous computational nodes in the network.

34 Admiral Jay Johnson, US Chief of Naval Operations, cited in Cebrowski & Gartska (1998).

35 See also Annex A Photos 2 to 4 (NATO bombing at Djakovica). During the Kosovo war, provocative images of the accidental NATO bombings were freely available on the internet. They demonstrated in graphic detail the horrors of "collateral damage" in a bid to sway public opinion.

36 Cited in Smith (1999) : 198.

37 Eyal (2000): 37.

38 Ignatieff (2000): 207.

39 Pearlman (1999) : 397.

40 Smith (1999) : 203.

41 Ignatieff (2000) : 100-101. For example, during the Kosovo War, the allies developed, for the first time, a computerised, real-time target development and review process that pulled together intelligence, operational and legal resources. The target folders were prepared from intelligence gathered from unmanned aerial vehicles (UAVs) operating in the field and organised by data specialists at the US European Command's Joint Analysis Centre in Molesworth, England. This information was not only reviewed by planners in Italy, Germany and NATO HQ in Belgium, and weapons experts at the Combined Allied Operations Centre in Italy, but also by a military lawyer based in Germany from the Judge Advocate General's office. The lawyer would "assess the target in terms of the Geneva Conventions governing the laws of war. He would rule whether it was a justifiable military objective in legal terms and whether its value outweighed the potential costs in collateral damage. A military lawyer also applied 'the reasonable person standard' of judgement to the fine line separating military and civilian targets".

42 Keohane & Nye (1998) : 91.

43 *Ibid* : 90.

44 *Ibid* : 90, emphasis added.

45 Quoted in Shulman (1999): 248.

46 Erdmann (1999) : 376.

47 Copley (1998) : 11.

48 Sun Tzu (1993) : 161.

49 Mandelbaum (1999): 151.

50 Freedman (1998c) : 764.

51 Mandelbaum (1998-99) : 35.

52 *Straits Times* (Singapore), 4 Feb 2000.

Bibliography

BOOKS / DOCUMENTS

Adams, James~ 1998. *The Next World War: The Warriors and Weapons of the New Battlefields in Cyberspace*, Hutchinson: London.

Anonymous~ 1996. Sawyer, Ralph D. (trans.), *One Hundred Unorthodox Strategies: Battle and Tactics of Chinese Warfare*, Westview Press: Oxford.

Arquilla, John & Ronfeldt, David (eds.)~ 1997. *In Athena's Camp: Preparing For Conflict in the Information Age*, RAND: California.

Ball, Desmond~ 1993. *Strategic Culture in the Asia-Pacific Region (With Some Implications for Regional Security Cooperation)*, Working Paper 270, SDSC ANU: Canberra.

Bennett, Bruce W., Twomey, Christopher P., & Treverton, Gregory, F. ~ 1999. *What Are Asymmetric Strategies?*, RAND: Washington, D.C.

Chomsky, Noam~ 1999. *The New Military Humanism: Lessons from Kosovo*, Pluto Press: London.

Clausewitz, Carl von~ 1989. *On War*, Michael Howard and Peter Paret (eds. and trans.), Princeton University Press: New Jersey.

Coker, Chris~ 1994. *War and the Twentieth Century*, Brassy's: London.

Freedman, Lawrence~ 1998a, April. *The Revolution in Strategic Affairs*, Adelphi Paper 318.

Gow, James, Paterson, Richard & Preston, Alison (eds.)~ 1996. *Bosnia By Television*, BFI: London.

Gray, Chris Hables~ 1997. *Postmodern War: The New Politics of Conflict*, Routledge: London.

Hamilton, Michael (ed.)~ 1986. *American Character & Foreign Policy*, William B. Eerdmans Publishing Company: Michigan.

Hanson, Victor Davis~ 2000. *The Western Way Of War: Infantry Battle in Classical Greece*, University of California Press: London.

Howard, Michael~ 1983. *Clausewitz*, Oxford University Press: Oxford.

Howard, Michael, Andreopoulos, George J. & Shulman, Mark R. (eds.)~ 1994. *The Laws of War: Constraints on Warfare in the Western World*, Yale University Press: New Haven.

Ignatieff, Michael~ 1998. *The Warrior's Honour*, Vintage: London.~ 2000. *Virtual War: Kosovo and Beyond*, Chatto & Windus: London.

Kaldor, Mary~ 1999. *New & Old Wars: Organised Violence in a Global Era*, Polity: Cambridge.

Keegan, John~ 1994. *A History of Warfare*, Pimlico: London.

Laidi, Zaki~ 1998. *A World Without Meaning: The Crisis of Meaning in International Politics*, Routledge: London.

MacGregor, Douglas A.~ 1997. *Breaking the Phalanx: A New Design for Landpower in the 21st Century*, Praeger: Connecticut.

Pearlman, Michael D.~ 1999. *Warmaking and American Democracy: The Struggle Over Military Strategy, 1700 to the Present*, University Press of Kansas: Kansas.

Pfaltzgraff, Robert L. & Shultz, Richard H. (eds.)~ 1997. *War in the Information Age: New Challenges for U.S. Security*, Brassey's: Washington, D.C.

Shulman, Milton~ 1999. *Voltaire, Goldberg and Others: A Compendium of the Witty, the Profound and the Absurd*, Quartet Books: London.

Smith, Jeffrey A.~ 1999. *War and Press Freedom: The Problem of Prerogative Power*, OUP : Oxford.

Sun, Tzu~ 1993. *Art Of War* in Sawyer, Ralph D. (trans.), *The Seven Military Classics of Ancient China*, Westview Press: Oxford.

Toffler, Alvin & Toffler, Heidi~ 1994. *War and Anti-War: Survival at the Dawn of the 21st Century*, Warner: London.

Ullman, Harlan K. & Wade Jr., James P.~ 1998. *Rapid Dominance - A Force For All Seasons; Technologies and Systems for Achieving Shock and Awe: A Real Revolution in Military Affairs*, Royal United Services Institute for Defence Studies Whitehall Papers.

Van Creveld, Martin~ 1991. *Technology and War: From 2000 BC To The Present*, Free Press: New York.

Articles/Chapters From Edited Titles/Conference Papers

Ajani, Fouad~ 2001, Nov/Dec, "The Sentry's Solitude" in *Foreign Affairs*, Vol. 80, No. 6, pp. 2-16.

Anand, Vinod~ 1999, May. "Lack of Moral and Ethical Dilemmas in the Western Narrative: A Perspective on Colonial Massacres, Strategic Bombings and Other Issues" in *Strategic Analysis*, Vol. 23, No. 2, pp. 271-282.

Aubin, Stephen P.~ 1999, Summer. "Operation Allied Force: War or 'Coercive Diplomacy'?" in *Strategic Review*, Vol. 27, No. 3, pp. 4-12.

Bacevich, Andrew J.~ 1999, Spring. "Mr Clinton's War on Terrorism" in *Strategic Review*, Vol. 27, No. 2, pp. 17-22.

Bell, Coral,~ 1999, Autumn/Winter. "Kosovo: The 'Zero Casualties' Strategy" in *Strategic and Defence Studies Centre Newsletter*, Australian National University, pp. 1-4.

Betts, Richard K.~ 1998, Jan/Feb. "The New Threat of Mass Destruction" in *Foreign Affairs*, Vol. 77, No. 1, pp. 26-41.

Byman, Daniel & Waxman, Matthew,~ 1999, Summer. "Defeating US Coercion" in *Survival*, Vol. 41, No. 2, pp. 107-120.

Collins, Steven,
~ 1999, Sep 8. "Shaping Perceptions During the Latest Balkans Imbroglio", Paper Presented at the InfoWarCon '99.

Copley, Gregory R.~ 1998 Sep/Oct. "The Impact of US Domestic Issues on the US and Global Strategic Posture" in *Defense & Foreign Affairs Strategic Policy*, pp. 5, 10 - 11.

Erdmann, Andrew P. N.~ 1999, Summer. "The US Presumption of Quick, Costless Wars" in *Orbis*, Vol. 43 No. 3, pp. 363-381.

Eyal, Jonathan~ 2000, April. "The Media and the Military: Continuing the Dialogue After Kosovo" in the RUSI Journal, pp. 37-43.

Feaver, Peter D.~ 1998, Summer. "Blowback: Information Warfare and the Dynamics of Coercion" in *Security Studies*, Vol. 7, No. 4, pp. 88-120.

Fischerkeller, Michael P.~ 1998, Summer. "David versus Goliath: Cultural Judgements in Asymmetric Wars" in *Security Studies*, Vol. 7, No. 4, 1-43.

Freedman, Lawrence
~ 1998b, Spring. "International Security: Changing Targets" in *Foreign Policy*, No. 110, pp. 48-63.
~ 1998c. "Military Power and Political Influence" in *International Affairs*, Vol. 74, No. 4, pp. 762-779.
~ 1998-99, Winter. "The Changing Forms of Military Conflict" in *Survival*, Vol. 40, No. 4, pp. 39-56. Glennon, Michael J.
~ 1999, May/June. "The New Interventionism: The Search for a Just International Law" in *Foreign Affairs*, Vol. 78, No. 3, pp. 2-7.

Gray, Chris Hables~ 1989. Ch. 2 - "The Cyborg Soldier: The US Military and the Post-Modern Warrior" in Les Levidow & Kevin Robins (eds.), *Cyborg Worlds: The Military Information Society*, Free Association Books: London.

- Gulin, V. P.~ 1997, Mar/Apr. "A New Conception of War" in *Military Thought*, Vol. 6, No. 2, pp. 16-21.
- Howard, Michael~ 1979. "The Forgotten Dimensions of Strategy" in *Foreign Affairs*, pp. 975-986.
~ 1999, Spring. "When Are Wars Decisive?" in *Survival*, Vol. 41, No. 1, pp. 126-135.
- Hurd, Ian~ 1999, Spring. "Legitimacy and Authority in International Politics" in *International Organisation*, Vol. 53, No. 2, pp. 378-408.
- Jandora, John W.~ 1999, Summer. "War and Culture: A Neglected Relation" in *Armed Forces & Society*, Vol. 25, No. 4, pp. 541-556.
- Johnson, Wray R.~ 1998, Autumn. "War, Culture and the Interpretation of History: The Vietnam War Reconsidered" in *Small Wars and Insurgencies*, Vol. 9, No. 2, pp. 83-113.
- Keohane, Robert O. & Nye, Joseph S.~ 1998, Sep/Oct. "Power and Interdependence in the Information Age" in *Foreign Affairs*, Vol. 77, No. 5, pp. 81-94.
- Krauthammer, Charles~ 1999, Fall. "The Short Unhappy Life of Humanitarian War" in *The National Interest*, No. 57, pp. 5-8.
- Lonsdale, David J.~ 1999. "Information Power: Strategy, Geopolitics, and the Fifth Dimension" in the *Journal of Strategic Studies*, Vol. 22, No. 2/3, pp. 137-157.
- Luttwak, Edward~ 1996, July/August. "A Post-Heroic Military Policy" in *Foreign Affairs*, Vol. 75, No.4, pp. 33-44.
- Mandelbaum, Michael.~ 1998-1999, Winter. "Is Major War Obsolete?" in *Survival*, Vol. 40, No. 4, pp. 20-38.
~ 1999, Summer. "Learning to be Warless" in *Survival*, Vol. 41, No. 2, pp. 149-152.
- Mathews, Jessica Tuchman~ 1989, Mar/Apr. "Redefining Security" in *Foreign Affairs*, Vol. 68 No. 2, pp. 162-177.
- Mecar, Jaroslav~ 1999, August. "Press, Lies and Video Tape: How the Serbian Media Report the War" in *Soldier of Fortune*, pp. 66-68.
- Nye, Joseph S. & Owens, William A.~ 1996, Mar/April. "America's Information Edge" in *Foreign Affairs*, Vol. 75, No. 2, pp. 20-36.
- Pechurov, S. L.~ 1997, Jul/Aug. "Revolution in Military Affairs: Viewed From the West" in *Military Thought*, Vol. 6, No. 4, pp. 87-96.
- Ratner, Steven R.~ 1998, Spring. "International Law: The Trials of Global Norms" in *Foreign Policy*, No. 110, pp. 65-80.
- Rothschild, Emma~ 1995, Summer. "What is Security?" in *Daedalus*, Vol. 124, No. 3, pp. 53-98.
- Shwartz, Winn~ 2000, Spring. "Asymmetrical Adversaries" in *Orbis*, Vol. 44, No. 2, pp. 197-205.
- Thakur, Ramesh~ 1997. "From National to Human Security" in Stuart Harris & Andrew Mack (eds.), *Asia-Pacific Security: The Economics-Politics Nexus*, Allen and Unwin: New South Wales.
- Ullman, Richard H.~ 1983, Summer. "Redefining Security" in *International Security*, Vol. 8, No. 1, pp. 129-153.

Web Resources

BBC NewsOnline@ <http://news.bbc.co.uk>

C⁴ISR Cooperative Research Program (CCRP) Homepage@ <http://www.dodccrp.org>

Cebrowski, Arthur K., & Garstka, John J.~ 1997. "Network-Centric Warfare: Its Origin and Future." US Naval Institute@ <http://www.usni.org/Proceedings/Articles98/PROcebrowski.htm>

Christensen, John

~ 1999, April 6. "Bracing for guerrilla warfare in cyberspace", CNN Interactive

@ <http://www.cnn.com/TECH/specials/hackers/cyberterror>

CyberAtlas

~ 2000. "The World's Online Populations"

@ http://cyberatlas.internet.com/big_picture/geographics/article/0,1323,5911_151151,00.html

Dunlap, Charles J.

~ 1997, Autumn. "21st Century Land Warfare: Four Dangerous Myths" in *Parameters* (pp. 27-37)

@ <http://carlisle-www.army.mil/usawc/Parameters/97autumn/dunlap.htm>

Headquarters, Department of the Army

~ 1993, June. US Army Field Manual 100-5 Operations

@ http://155.217.58.58/cgi-bin/atdl.dll/fm/100-5/fm100_5.pdf

Office of Secretary of Defense

~ 1994. *Joint Vision 2010*

@ <http://www.dtic.mil/jv2010/jvpub.htm>

~ 1997. *Quadrennial Defense Review*

@ <http://www.defenselink.mil/pubs/qdr/>

Serbian Information Service

@ <http://www.serbia-info.com>

Stech, Frank J.

~ 1994, Autumn. "Winning CNN Wars" in *Parameters* (pp. 37-56)

@ <http://carlisle-www.army.mil/usawc/Parameters/1994/stech.htm>

Newspaper Articles

Straits Times (Singapore)

~ 2000, 4 Feb. 'China Preparing For War With The US?'



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Preparing for Uncertainty: Beyond Scenario Planning

by MAJ Lim Khia Teck

"New developments in technology, international co-operation and the nature of the threats, mean that armed forces and navies have to constantly innovate and come up with new and creative solutions, both in peace-time and in operations, in order to meet the challenges that unfold.

While we train and hone the skills of our men and our units, we know that the next conflict is unlikely to be like the last. We have to try to envision what the next battle will be like and prepare for that, so as not to be on the receiving end of nasty surprises.

But the paradox is that what we need most to train our men in, is not to be surprised, if in spite of all the preparation and training, things do not unfold as they had expected. They must have the ability to assess the situation as it unfolds and have the ingenuity and courage to try bold and creative solutions, even in the heat of battle, to prevail."

RADM (NS) Teo Chee Hian

Minister for Education and Second Minister for Defence¹

These words aptly describe the new environment armed forces around the world find themselves in. The arrest of 15 suspected terrorists by the Internal Security Department in Singapore, most of them seemingly everyday citizens, has served as a rude awakening to us all concerning the reality and proximity of the new threat. Security agencies and armed forces around the world have had to take stock and re-examine the way they conduct their business. We have seen the United States government take the radical step of creating a new cabinet post overseeing Homeland Defence. Singapore has likewise taken steps to heighten our readiness and rally our people to stand united against this new foe.

The events of September 11 and the aftermath, while themselves alarming, further point to the reality that our future will be one of uncertainty. By wanting to be an active and responsible citizen of the global village, we also increase our vulnerabilities and make new enemies. With technology and expertise so readily available to those who have the buying power, the situation is made worse as we cannot presume we can predict what our potential unknown enemies can be capable of.

While the RSN has successfully developed its war fighting capabilities over the years with the acquisition of submarines, landing ship tanks and frigates, none of these would have been an answer to the new threat we face. No one expected that terrorists would explore the use of small boats for suicide missions to destroy warships. One possible response to this situation would be to pour resources in intelligence gathering and establish closer ties with other security agencies both within and outside the SAF. This would give us better warning of emerging threats to facilitate our developing the likely scenarios more accurately. However, Admiral Teo's concession that there is still the possibility of getting caught by surprise despite our best efforts in forecasting hints to us there may be some limitations to forecasting and scenario based preparations. There is therefore a need to investigate our understanding of how we should deal with uncertainty and the application of scenario based strategies.

Is Scenario Planning Effective for an Uncertain Future?

In the corporate world, change and uncertainty is nothing new. Knowledge management advocate David Snowden describes the modern marketplace as having "uncertainty as the new reality". Traditionally, organisations have depended on scenario based planning to reduce uncertainty and risk. Snowden warns that scenario based activities are closed systems and applicable only to the "knowable future". He concludes that they are therefore unsuited to deal with situations of real uncertainty. In other words, the organisations and people prepared by scenario based activities will be unlikely to succeed should things not go off as expected. In addition, Snowden highlights the danger of scenario based exercises building a blinkered

mindset in the people, lulling them into expecting things to unfold exactly as the script dictated when the initial unfolding of events appear similar to what they had experienced in training. Management consultants Hodgson and White similarly warn against putting too much faith into prediction tools and careful planning. They argue that you can never accurately predict what your competitors will do, nor what new start-up (or threat in our case) will arise to threaten you.

For the security forces in Singapore, scenario based planning has played a major role, and continues to influence, how we develop plans for operations, as well as how we train. Scenario based planning can shorten our response time and maximise chances of success should the forecast prove accurate. In the RSN, scenario based planning and training is something we have much experience in. Combat Simulation Centres automate operators' reactions to injected scenarios, both at the individual level and at the team level. War games in the tactical trainers and at sea are also based on a finite set of scenarios.

However, the limitations of such training to a predictable script were recognised by the Chief of Navy, RADM Lui Tuck Yew and articulated in an interview with *The Straits Times* in November 2000. In response, he directed the navy to prepare itself for more realistic battles that involved "dynamic and flexible situations, with a lot of unpredictability". While scenario based planning is still a useful tool to deepen our understanding of issues involved in areas of concern, we need to recognise the scenario based exercises not only result in unrealistic training, it can also develop dangerous mindsets and hamper our ability to adapt to situations.

Levels of Uncertainty

A framework which may help readers better conceptualise the progressive levels of uncertainty can be found in the "Uncertainty Matrix"² developed by Snowden. An adapted version is illustrated in figure 1 below.

	Uncertainty of objective ----->	
Uncertainty of capabilities V	Scenario based planning	Awareness of environment
	1	2
	Awareness of self capacity	Rules based planning
	3	4

Figure 1. Uncertainty Matrix

In the matrix, Snowden defines four sectors, with sector one being somewhat predictable and the least uncertain, and sector four representing a highly unpredictable setting. In this article, we will focus only on both extremes of the uncertainty levels and attempt to better understand the differences in strategies involved. Snowden suggests that scenario based planning would be a good response in sector one, where relatively low levels of uncertainty exist and accurate forecasts can be achieved. However, when faced with extreme uncertainty, the strategy is to move from one of adherence to a static plan developed through forecasting to one of empowering ground units to react to the environment. Snowden articulates that the deciding factor for success when faced with the unexpected is the "ability of the organisation at a cellular level to respond consistently in the face of uncertainty".

Consistent Response in Times of Uncertainty

To ensure the cells or basic units in the organisation can perform consistently, even in the face of uncertainty, a concept drawn from complexity theory suggests that simple rules allow consistent behaviour in the face of uncertainty. This is why Snowden advocates the use of rules based activities in sector four of

the uncertainty matrix, where the level of uncertainty is highest. Snowden highlights that simplicity allows an organic entity to self organise in the face of complexity. He warns that when operating under principles of uncertainty, control can be fatal in slowing down the sense and response mechanism of an organisation to the point of inaction. Snowden illustrates this point by recounting how scientists found that complex theoretical models could not compare to models with only a few simple rules when attempting to forecast the flocking behaviour of birds. A similar concept was used with a mobile robot called "Genghis"³ which had six intelligent legs but no central "brain". "Genghis" was able to perform well despite not having a centralised command and control agency. Management consultant Gareth Morgan described this feat as a "metaphor for understanding how intelligent action can emerge from quasi- independent processes, linked by a minimal set of key rules, making the whole system appear to have an integrated, purposeful, well coordinated intelligence."

When faced with unfamiliar situations, organisations instinctively attempt to tighten the reins and establish even tighter control. Instead, the experts suggest that what we should really be doing is to give the ground units a few simple rules and then allow them the autonomy to self organise. The only provision here is that the ground units are "intelligent" in their own right, like each of the legs of "Genghis".

In the RSN, the command and control system already allows for such empowerment for task group commanders at sea. A good example of such empowerment can be seen in submarine operations, where intervention from a central command agency is minimal. Surface ships organised into task groups, pre-formed surface action groups (SAG) and submarine attack units (SAU) operate along similar lines.

While the commanding officers of ships and their key officers can be trusted to perform like "intelligent legs", we need to now proliferate this idea down the ranks and throughout the organisation, even to the CISCO policemen who now stand guard at our bases and camps. There is much research available on how organisations can prepare themselves and their people to better deal with change and uncertainty. I have highlighted four key areas I feel would be important first steps for the navy to consider taking if we are to be prepared in a rapid changing and uncertain environment. These include the areas of:

- Empowerment and trust as a culture
- Risk tolerance to build good sense
- Tenacity and skill in problem solving
- A questioning mind

Empowerment and a Few Simple Rules

Research has shown that empowerment of the "organic unit" can release its full creativity and commitment. Only when the unit is empowered can it take the bold steps against an unexpected threat. When addressing challenges facing organisations in fast shifting environments, renowned management consultant John Kotter echoed that "without sufficient empowerment, critical information about quality sits unused in worker's minds and energy to implement change lies dormant."

A key design factor for "Genghis" contributing to its success was the freedom for each leg to sense and independently decide what to do, bound only by a few simple rules. When facing the unexpected, commanders not only have to abandon the relative safety of detailed operations plans, they are now further challenged to quickly figure out which few simple rules will ultimately impact the success of the operation, and thereafter communicate them to his ground units.

Empowerment is built on the foundation of trust, and trust requires a track record of positive experiences in the interactions between two parties. Trust and empowerment cannot be turned on abruptly in the heat of battle without prior experience. Trust is best tested in stressful and uncertain situations. We need to revisit

our readiness to tolerate small failures, when such failures may be really opportunities to facilitate learning and build trust. Indeed, we should not restrict this spirit of empowerment to only operational tasks, but let it permeate even peacetime activities. We stand to gain the same benefits of fully committed people taking ownership for their areas of responsibilities, and contribute to the trust building process as well.

Risk Tolerance to Build Good Sense

It is a fact that the more we trust and empower, the greater is the risk we bear, as things will no longer be under our direct control. To make matters worse, Hodges and White warn that we will need to increasingly depend on our intuition in times of uncertainty. The reason for this is that uncertainty is usually exacerbated by a lack of information or information overload.

There are two options open to organisations when risk increases. We can attempt to protect our people behind a cage of rules, or we can let them learn good sense by tolerating it in a responsible manner. Hodges and White made the observation that even the West has become increasingly less tolerant of risk due to a trend towards increasing legislation covering trivially low risk occurrences. The most mind boggling of these occurrences being the MacDonald's hot coffee spill incident⁴ which resulted in warnings being legislated on all hot drink containers. Hodges and White warned that "we need to realise that as we control and legislate to reduce risk, the less our people will be able to understand, manage and tolerate the outcome of risks."

The navy, and our society as a whole, are both governed by rules and regulations which control every aspect of our lives. Rules are particularly prevalent in the SAF, especially in the area of safety, as ours is a business of high risk and every member of SAF is a national asset. It would therefore seem that the uncertain environment we face requires a mode of operation which is relatively more risky, and pulling in the opposite direction from our intuition to legislate for safety and risk control. While we should not throw all caution to the wind and run the risk of becoming reckless, it is timely to re-examine our safety directives and mindsets towards these directives to see if either are overly protective and stifling the opportunities for ground units to acquire good sense. Our new paradigm of "trying bold and creative solutions" will require our ground units to take risks, and we need to give them the opportunity to build good sense and exercise good judgement.

Tenacity and Skill in Problem Solving

Hodges and White have observed that people and organisations which embrace uncertainty are often drawn to doing things, inventing things and providing services that others find more difficult to do. Such people and organisations were also drawn to projects they know others have failed at, as a challenge to themselves. Snowden similarly notes that organisations operating successfully in sector four of the uncertainty matrix are "robust in that they have a high tolerance of uncertainty".

To build this robust quality in people and organisations, Hodgson and White recommend embarking on "Difficult Learning", that is, attempting tasks others find difficult or have failed at before. Hodgson and White suggest that this helps us confront our fear of failure, the fear of looking like an idiot. Under circumstances of uncertainty, we want our people to be able to progress almost in a "business as usual" fashion and not be locked up in confusion. In this matter, we can certainly learn from our naval divers who have employed such a philosophy to great effect in moulding tough, unyielding warriors, physically and mentally. The point here is not that we should put all our people through diver's school. Rather, we should challenge ourselves with difficult assignments to build robustness, and also challenge our ability to accept the potential benefits of failure at difficult tasks.

While we build mental resilience, we can simultaneously give our people the problem solving skills they need in complex situations. Traditional standardised instructions do not particularly prepare people well to overcome unfamiliar situations. Back in 1997, Instructional Design consultant Van Merriënboer had articulated that "complex cognitive tasks that must be performed by humans, because they require flexible problem-solving behaviour, are becoming increasingly important in the field of industrial and vocational training." Since then, much research has been done in terms of helping people acquire problem-solving skills.

We need to incorporate the results of such research into our training systems. Some notable instructional design theories which resulted from such research include:

- Open Learning Environments⁵
- Collaborative problem-solving⁶
- Elaboration theory⁷

Questioning Minds

Empowerment, good sense and a tenacious attitude will give our people the necessary attributes to triumph in complex and difficult circumstances. However, we still need our people to be observant enough to know when conditions on the ground have deviated from what we have planned and they need to take alternative actions. This requires a questioning mind and a willingness to challenge the *status quo*. "The important thing is not to stop questioning," Albert Einstein once said.

While the challenge here sounds somewhat like the theme of the "PS21 Excel Convention and Ceremony 2001" (Desire to Improve, Dare to Innovate), we need to see the applicability of the same attitude in both situations. This same questioning attitude and restlessness for a better understanding can save us from the dangers of scenario planning and rehearsals which can blinker our thinking. Hodgson and White suggest that if we fill our organisation with people keen to explore their lack of knowledge, the organisation will become competent at handling the things they don't know. This concept is equally applicable to business organisations dealing with new developments in the marketplace, and to a group of ships at sea investigating an unexpected development in the threat situation. What we need is a climate in which a lack of knowledge is not a weakness, something to be hidden, but a catalyst which sparks off people to explore ideas and challenge the *status quo*.

Conclusion

To meet the challenge of the uncertain future and the threats it may contain, we need to adopt two courses of actions. The first is to focus more resources on collecting intelligence to facilitate more accurate scenario planning. This task we should be able to handle with reasonable confidence. It is the second, of preparing our navy and its people to operate in a more autonomous mode, which will be a formidable challenge to commanders and trainers. Commanders need to empower people, be more risk tolerant and encourage their subordinates to take on difficult tasks as learning experiences. Both commanders and instructors must also prepare themselves to harness the inputs of sailors able to think critically. In the schools, trainers need to grapple with imparting problem-solving skills and not just conducting standardised lessons.

The challenge of providing security for our nation in these uncertain times is upon us. The authorities have warned repeatedly that the terrorist threat is not past, and is unlikely to be so in the near future. While some of the organisational structures to deal with uncertainty are in place, much more still needs to be done in terms of changing mindsets deeply etched by our society and education. The popular saying is that things will never be the same after September 11. We cannot afford to allow the apparent calm and security in Singapore to distract us from the urgency of the matter at hand.

Endnotes

1 Excerpt of speech by RADM (NS) Teo Chee Hian, Minister for Education and Second Minister for Defence at Foundation Stone Laying for Changi Naval Training Base, Jan 2002.

2 Uncertainty matrix - Snowden, D.J. "The paradox of story. Simplicity and Complexity of story", *Journal of strategy and scenario planning*, Nov 1999, p2.

3 "Genghis" Created in MIT by Rodney Brooks. A kind of 'mechanical cockroach' that has six legs but no brain. Each leg has a microprocessor that can act as a sensing device that allows it to think for itself and determine its own actions. Other semi-independent thinking devices co-ordinate communications between the legs. The independence of the legs give great flexibility and avoids the mammoth task of centrally processing all the information needed to co-ordinate the legs as an integrated process. Described in detail in Kevin Kelly's book *Out of Control*.

4 MacDonald's hot coffee incident A person accidentally spilled coffee on her legs at a MacDonald's drive-in and scalded herself badly. She successfully sued MacDonald's for selling her a dangerous product.

5 Open Learning Environments An instructional theory appropriate for exploring fuzzy, ill-defined and ill-structured problems. Developed by Michael Hannafin, Ken Oliver and Susan Land. See Reigeluth, C.M.

6 Collaborative problem solving An instructional theory to develop content knowledge in complex domains, problem solving and critical thinking skills, and collaboration skills. Developed by Laurie Nelson. See Reigeluth, C.M.

7 Elaboration theory A guide to scope and sequencing content for medium to complex kinds of cognitive and psychomotor learning. Emphasises whole task learning. Developed by Charles Reigeluth. See Reigeluth, C.M.

Bibliography

Hodgson, P. & White, R., *Relax It's Only Uncertainty. Lead the Way When the Way is Changing* (London, 2001).

Kotter, J.P., *Leading Change* (Boston, Massachusetts: Harvard Business School Press, 1996).

Morgan, G., *Images of Organisation*. (Thousand Oaks, California, 1997).

Reigeluth, C.M., *Instructional Design Theories and Models. A New Paradigm of Instructional Theory. Vol II* (Mahwah, New Jersey: Educational Technology Publications, 1999).

Snowden, D.J. "The Paradox of Story. Simplicity and Complexity of Story", *Journal of Strategy and Scenario Planning*, Nov 1999.

Tan, K.K. "Navy Chief: Our War Games Too Unreal", *The Straits Times*, November 11, 2000.

Van Merriënboer, *Training Complex Cognitive Skills. A Four Component Instructional Design Model for Technical Training*. (Englewood Cliffs, New Jersey: Educational Technology Publications, 1997).



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Operation Eagle Claw, 1980: A Case Study In Crisis Management and Military Planning

by LTA Chua Lu Fong

"...the assault plan was sketchy. Its chances for success were very slender indeed. The basic scenario looked very complicated. It also revealed that at this time the Armed Forces of the United States had neither the present resources nor the present capabilities to pull it off. Training was needed to accomplish unique and demanding tasks."¹

Colonel Charles Beckwith Commander, Delta Force

The 1980 seizure of the United States embassy in Iran and the capture of American hostages was a climax in the history of US Iran tensions and one of the lowest points in the American foreign policy record. The tragic failure of Operation Eagle Claw, the ambitious military operation mounted to rescue American hostages in Iranian hands, had led to the deaths of eight American soldiers without seeing combat and, in the larger scheme, exposed the limits and inadequacies of the world's strongest military power.

The embassy in Tehran had been seized by Iranian student demonstrators on 4 November, 1979, in the wake of the Iranian revolution and fanned anti-American sentiment. The Iranian government was to condone these actions in the aftermath, leading to the failure of negotiation attempts by the administration of US President Jimmy Carter. The final resort was a military rescue mission to extricate the 53 American hostages, scheduled for 24 April 1980. The planned operation was to begin with the flight of eight Sea Stallion helicopters from the aircraft carrier USS Nimitz and six C-130 (Hercules) transport aircraft to their refuelling point in Desert One, a secret Iranian landing strip. The refuelled helicopters would fly crack counterterrorist troopers from Delta Force² to Desert Two, a remote mountain hideaway near Tehran. The Delta troopers would hide a full day before being infiltrated into Tehran by trucks, at which point they would storm the embassy compound, use all necessary force to free the hostages, and then evacuate the country in helicopters, with help from aircraft providing covering fire and Army Rangers providing perimeter defences in an intermediate landing strip.³

The plan was ambitious and complex, and its execution met with disastrous results. Mechanical failures in three helicopters led to the decision to abort the mission at Desert One. To compound the defeat, a collision between aircraft during the withdrawal phase caused an explosion that killed eight soldiers. The mission's failure was a disappointment, and its disastrous aftermath had eroded the faith of the American people in the Carter administration. The hostages were eventually released after 444 days in captivity.

Using the failed rescue attempt as a focal point, this research paper seeks to highlight salient aspects of crisis management and joint operational planning, particularly in the context of low-intensity conflict (as relevant now as it was then in 1980). This case-study approach is necessarily inductive, using a single event to derive or support more general conclusions about issues facing decision-makers and planners.

This paper proceeds in three parts. Firstly, possible pitfalls and pathologies in the political decision-making process are identified and explained. Secondly, the military planning phase of the mission, Operation Rice Bowl, is examined for other issues and ambiguities which arose. Thirdly, we examine the events and issues most related to the decision to terminate the mission, centred upon the failure of three helicopters to continue the mission.

Part I: Problems with the Decision Process

Statistical tests by Herek et al confirm our most fondly held notion that better decision-making is usually associated with more successful policy outcomes.⁴ This notion, however, applies *ex ante* to a large enough sample of events, like a series of independent coin-flipping trials; we must analyse historical case studies with an appreciation for the fact that specific political events, against a backdrop of particular circumstances, happen once and only once. A social scientist is compelled by training to see patterns everywhere, but we would do well to anchor the following account with a historian's appreciation for the uniqueness of every political event in national histories.

Establishing Probabilities: of Base Rates and Historical Metaphors

In order to reach the decision to launch a rescue mission, it was necessary for the Carter administration to convince itself that the rescue mission had a good chance of success. This was an exercise that was fraught with difficulties, since the operation was novel and estimates of success were embodiments of hope and thought experiments rather than any infallible science.

Using an organisational perspective, Rosenzweig (1993) finds it notable that there was an unwillingness to quantify the mission's probability of success in numerical percentage terms, which was inconsistent with most theoretical notions of procedural rationality. He notes that "there was never an explicit estimate of the mission's chances of success" and deplors the lack of quantification of risk. Yet, he concurs with White House Press Secretary Jody Powell who reckoned that an explicit percent estimate would have been a "fake number, a sort of false empiricism."⁵

A conventional practice of establishing at least a qualitative estimate of success probabilities is to study past events which resemble the imminent decision. An appropriate sample of past events would provide "base rates" for estimates of success, as well as offer historical analogies to encourage optimism or caution as the case may be.

Unfortunately, a serious study should have encouraged pessimism about the chances of mission success, but did not. Base rates were difficult to establish because the mission was unique and Delta Force was only created and fully operational in 1979. Nevertheless, a survey of US commando-type special operations reveals a less than 50% success rate and should have augured ill for the chances of success.⁶ Instead, the administration had chosen to justify its hopes by pointing to the recent successes of counterterrorist actions at Mogadishu (by Germany) and Entebbe (by Israel).⁷

The choices of historical analogy in guiding decision-making had important prescriptive implications. Dr Zbigniew Brzezinski, the Assistant to the President for National Security Affairs and one of the rescue mission's most bullish proponents, was deeply encouraged by the successes at Mogadishu and Entebbe. However, this contradicts the initial professional judgement of Colonel Charlie Beckwith, the commander of Delta Force:

"Logistically speaking it would be a bear. There were the vast distances, nearly 1,000 miles, of Iranian wasteland that had to be crossed, then the assault itself, against a heavily guarded building complex stuck in the middle of a city of 4,000,000 hostile folks. This was not going to be any Entebbe or Mogadishu."⁸ Nothing could be more difficult."⁹

Gary Sick of the National Security Council writes in a post-crisis review: "There was never any illusion on the part of anyone... that it was anything but a high-risk venture... that would not only strain the limits of technology but would also press the endurance of men and machines to the outer margins."¹⁰ How, then, did the administration eventually decide to undertake a rescue mission widely viewed as very risky?

The Path to a Dangerous Decision

Perhaps, it was simple wishful thinking that had prompted the Carter administration to descend the slippery slope of decision-making. Various theoretical explanations have been advanced to explain the progression from the recognition of high risk to the eventual acceptance of this risk.

One explanation squares with the aphorism that "a committee can make a decision that is dumber than any of its members." Smith (1984) claims that the Carter administration had been afflicted with "groupthink", whereby "excessive *esprit de corps* and amiability restrict the critical faculties of small decision-making groups" and "leads to irrational and dehumanising action directed against out-groups."¹¹ Sick writes, "Once one accepted the necessity of action, the selection of the rescue mission quickly *asserted itself as a logical inevitability*."¹² This squares with Alexander George's description of a possible malfunction of the decision process: "When the President and his advisers agree too readily on the nature of the problem facing them and on a response to it."¹³ The failure of negotiations had predisposed the administration toward stronger action. Escalating military pressure through naval mining or airstrikes was punitive but would do nothing to secure the release of the hostages. Secretary of State Cyrus Vance had been the only articulate and determined objector to the rescue mission proposition but the momentum of groupthink had drowned out his voice.

Thus, when Vance provided serious arguments against the execution of a rescue mission, by asserting that the hostages would not be harmed further and that a rescue mission would likely endanger other American journalists in the vicinity by provoking Iranian retaliation, his ideas were dismissed. Narrative accounts indicate a certain desperation to take some form of positive action, instead of playing the patient waiting game advocated by Vance.

Another way to describe the propensity for risky action is to use prospect theory. McDermott (1992) uses the framework of prospect theory, developed by Tversky and Kahneman, to explain why President Carter, usually of a prudent and humanitarian bent and somewhat averse to exercising military options in foreign policy, had agreed to launch the rescue mission, a high-risk venture that was likely to involve bloodshed. In McDermott's creative application of prospect theory, Carter had been operating in the domain of losses and was thus willing to take large risks in order to restore or at least get closer to the *status quo*.

To sum up, a potent combination of groupthink-like decision processes and risk-acceptance attitudes had pushed the administration into a decision that was, retrospectively at least, almost unthinkably dicey.

Part II: Problems with the Planning Phase: Operation Rice Bowl

This section addresses two ambiguous issues that were related to the planning of the mission itself. Firstly, the role of military judgement in high-level crisis management is explored. Secondly, the trade-off between flexibility and commitment is assessed.

The Soldier and the State

In dealing with the crisis and approving plans for a military rescue mission, Carter wanted to avoid the pitfalls of Presidential micro-management of military affairs, a shortcoming of Lyndon Johnson during the Vietnam War and John F. Kennedy during the Cuban missile crisis, by deferring judgement to military experts. After all, "deferral to experts was both a way to improve accuracy and also to preserve accountability."¹⁴ On the other hand, the military has been accused of having a biased "can-do" spirit which understated the objective risks and limitations of the missions.¹⁵ This is a serious dilemma for a President who needed both military expertise and military objectivity in evaluating decisions on the use of force.

There is no theoretical consensus on the kinds of systematic biases which soldiers bring to the strategic decision process. Posen (1984) posits that military organisations are characterised by parochial interests such as power, prestige and size.¹⁶ Hence, their influence may systematically bias foreign policy toward

offensive options. Furthermore, being specialists in combat, military officers possess an informational advantage over civilian leaders, and can easily preserve their autonomy in the technical aspects of military planning. However, Huntington asserts that "the military man rarely favours war [as] he always favours preparedness, but he never feels prepared He is afraid of war. He wants to prepare for war. But he is never ready to fight a war."¹⁷

The evidence from this case study is equally mixed. While the generals on the President's advisory staff have been attributed with an optimistic bias, commanders on the ground were much less sanguine about the mission's chances of success. Colonel Charlie Beckwith, who established and commanded the Delta Force unit responsible for the embassy assault and hostage rescue, was famous for the following conversation with Task Force Commander Major General James B. Vaught during the preliminary planning stage:¹⁸

"What's the risk, Colonel Beckwith?"

"Oh, about 99.9 percent."

"What's the probability of success?"

"Zero."

"Well, we can't do it."

"You're right, Boss."

"I've got to buy time from the JCS."

In his book *Delta Force*, Beckwith details the immense difficulties associated with the rescue mission. Intelligence was poor in Iran, and "it had always been assumed that when Delta was needed overseas, the country in which it would operate would be friendly or at least neutral."¹⁹ As the Air Force did not then have a special operations aircraft capability, the pilots for the mission had been drawn from the Marine Corps and trained in time for the aggressive flying style which, though the mission demanded it, was unfamiliar to them.

The contradiction between the optimism of the flag-rank staff officers and the pessimism of field commanders like Beckwith indicates that the feedback of ground commanders had not been taken seriously by a civilian administration which was determined to execute what it perceived as a last resort.

Complexity and Commitment

Operation Eagle Claw had been conceived as a highly complicated mission with many components and links. The theory of normal accidents offers some suggestive clues as to the nature and complexity of the operation involved. Organisational tasks may be classified along two dimensions: simple or complex, and loosely- or tightly-coupled. Given the diversity of specific military tasks, an armed operation could fall into any of the four possible categories. The involvement of multiple units - Sea Stallion helicopters, C-130 transport aircraft, Marine Corps pilots, Army Rangers and Delta Force operators - and stages in the mission makes it highly complex. Furthermore, the need for the men and aircraft to move under cover of darkness meant that there was little room for error in maintaining tactical concealment, making it a tightly-coupled task. Hence, Operation Eagle Claw, as a complex and tightly-coupled task, was like an accident waiting to happen.

	Loosely Coupled	Tightly Coupled
Simple	Clerical tasks	Factory assembly lines Security guard systems
Complex	Public relations School administration	Nuclear plant management Joint military operations

Fig 2: A typology of tasks, in normal accident theory.²⁰ A joint military operation, like Eagle Claw, is both complex and tightly-coupled.

Indeed, the mission was a complex chain with multiple segments. According to Rosenzweig's organisational perspective, a *conjunctive probability bias* had prevented the leaders from seeing that overall mission success would be considerably less than the success of any single mission component.²¹ The conjunctive probability bias had been allowed to operate only because there were many conjunctures in the first place. Unfortunately, the distances involved were so large and the embassy located so deep in enemy territory that the mission could hardly have been simplified further. Other infiltration/exfiltration options, such as using trucks or airborne drops, had been considered but overland infiltration took too long and merely increased the time interval in which the plan could be discovered, and airborne drops cause excessive casualties even before any combat begins. Helicopter infiltration (with intermediate refuel points) and the use of a special operations force gave the mission at least an appearance of surgical precision.

Strangely, some accounts suggest that having more stages gave the President the subsequent option of aborting the option, which implies that Carter had been less than totally committed to the rescue mission. After all, the desire to maintain flexibility *during* the mission itself indicates that starting the mission need not imply a commitment to see it through. For example, Gary Sick writes that "the need to be able to terminate and withdraw at any point, together with the need for absolute secrecy, added to the complexity and difficulty of both planning and execution."²² Furthermore, according to Sick, "the operation was designed as a series of independent stages, capable of being terminated at any point if the mission was compromised."²³ In addition, Livingstone insists quite saliently that

*"... the plan approved by the White House had too many 'bail out' mechanisms and not enough backup systems to overcome unexpected problems, thus confirming a lack of commitment to the original plan... It would appear that the White House tried to make the operation so free of risk that it was doomed from the outset inasmuch as any setback virtually guaranteed that the mission would not proceed."*²⁴

Part III: Problems with Execution: Operation Eagle Claw

This section deals only with the failure of the three helicopters which had led to the mission abortion, and not with the aircraft collision and explosion which occurred during mission withdrawal.

For Want of Six Helicopters

The first part of the mission had eight Sea Stallion helicopters fly from the carrier *USS Nimitz*, under way in the Arabian Sea, to rendezvous with the Delta troopers at Desert One where the "helos" would also refuel. Six had been deemed as the minimum number of helicopters needed for the mission. Unfortunately, three helicopters dropped out of the mission. Helo Number Six suffered rotor blade failures and needed to be abandoned. Helo Number Five entered a blinding dust-storm and, at less than twenty-five minutes to clear conditions and less than an hour from Desert One, reversed course and returned to the mother ship. Helo Number Two had reached Desert One but its hydraulic leaks rendered the craft crippled for the rest of the mission.²⁵ There was a tense moment in the White House when the leaders considered going ahead with the

mission with just five helicopters but eventually deferred to and accepted the ground commanders' decision to abort.

These events revealed two issues. Firstly, was there a lack of pilot resolve in the decision to reverse the course of Helo Number Five? This was the most controversial issue to come out of post-mortem analyses.²⁶ Secondly, if it had been decided *ex ante* to proceed with no less than six helicopters, why did the administration later consider proceeding with five? Was there a breakdown in decision-making discipline?

Beckwith was reputed to have blamed the pilots for the failure of the mission. His account, admittedly riddled with the fallible wisdom of perfect hindsight, describes the mental shakiness he had observed in some of the pilots. Furthermore, when a helicopter had collided with a C-130 fixed-wing plane and exploded during the withdrawal from the scene (after the mission had been aborted), the helicopter pilots had abandoned their helicopters and left the aircraft there (containing money, maps, documents and so on) without taking time to destroy their aircraft and hence maintain security. Beckwith had called them "cowards".²⁷

The craft of counterfactual thinking suggests that the most mutable aspect of the military bungle leading to the mission's termination was the withdrawal of Helicopter Number Five. One good test of whether the lack of pilot resolve, as opposed to a disciplined adherence to standard operating procedure, was the motivation behind the pilot's decision to turn back is the question: would he have turned back if he knew that only five other helicopters besides himself would later reach Desert One in fighting fit shape? Proponents of the normal accident theory charge that, though redundancy in systems should minimise hazards and improve performance, redundancy can sometimes be an active cause of accidents.²⁸ In this instance, because two more than the required number of helicopters had been procured for the mission, an overall lack of complete pilot resolve might lead each individual to compromise his performance by thinking, "It wouldn't matter if I screwed this up, there would be the other seven to carry on." This accusation of inadequate pilot motivation is echoed by the on-scene air commander Colonel James Kyle who blames the pilot of Helo Number Five for the mission's abortion.²⁹

The second issue is whether the mission would or could proceed with just five helicopters. It should have been a moot point since the finalised plan of the mission impressed upon everyone that six was the absolute minimum. It seems that everyone, from the troops on the ground to the Commander-in-Chief, had been secure in the knowledge that the worst could not occur. This was evident in the way the key decision-makers, in a knee-jerk reaction, questioned and re-considered the plan, contemplating the possibility of going ahead with five helicopters after three had been taken out. This point in time had been an immense source of tension. General Vaught relayed a message to the ground commanders to ask them to reconsider going ahead with five helicopters, which had angered Colonel Beckwith because it placed upon them a burden which Beckwith felt was undeserved and unjustified, in view of the finalised plans. As Beckwith describes the occasion, "How... can the boss ask me that (to go ahead with five helicopters)? There isn't any way. I'd have to leave behind twenty men. In a tight mission no one is expendable *before you begin!*" Colonel Kyle writes of the impossibility of carrying on with just five helicopters: "The only options were to either dump enough fuel from each Sea Stallion to allow for the weight of the extra troopers or reduce the number of Delta Force by some twenty shooters."³⁰

Was it good decision-making practice for the administration to even consider proceeding with five helicopters? Beckwith certainly did not think so, since he recognised that the mission was "tight" and left little room for error or compromise. On the other hand, Herek et al consider "failure to consider originally rejected alternatives" to be a feature of pathological decision-making.³¹ Which offers a more defensible normative view of decision-making: discipline or flexibility?

For all the *prima facie* appeal of decision-making flexibility, I would argue that discipline is more valuable than the sort of "flexibility" displayed during the crisis, especially since the latter had occupied unnecessary time which could have endangered troops as they remained longer in the desert. Beckwith was right to expect the administration to stick to their game plan: after all, the leaders should have been prepared to make the right decisions and react instantly in any contingency. If the worst happened, as it did, the administration should be prepared to pull the plug on the mission immediately, as intellectually if not

emotionally rehearsed. Unnecessary vacillation and delay would only be unnecessary evils in a crisis situation where every minute counts. The soldiers remained vulnerable as long as they remain in the desert. As soon as the mission began, there would and should be no time to return to the drawing-board the whole drawing board ought to be figured out before the ball begins rolling.

Conclusion

It has been said that "victory has a hundred fathers but defeat is an orphan" but the failure of the Iran hostage rescue mission appears to result from an unfortunate combination of so many culpable elements, from organisational malfunctions to tactical lapses. The mission was a courageous endeavour, but its failure had domestic-political repercussions, inching President Carter out in the close 1981 election match against Ronald Reagan.

This paper has attempted to unite the various theoretical strands which highlight organisational problems with less abstract accounts of what actually took place, and at the same time highlight issues which are at once ambiguous yet important. At every level, it is evident that the United States had been forced into a box which was difficult to think and act outside of. A rescue mission was horribly risky but there were no alternatives for securing hostage safety decisively. A helicopter pilot appears to have failed his duty but then he had been "flying in a bowl of milk".³²

It is difficult to guess whether the mission would have succeeded if at least six helicopters had made it to Desert One in shipshape condition. Then again, it was such a complicated operation that anything could go wrong subsequently. The Delta operators might be discovered during their day hideout. Many hostages might have died during the assault. The getaway would probably have been a messy affair. The long arm of Murphy's Law appears to have had an insidious presence in the spring of 1980.

It was indeed a sad moment in the military and political history of the United States. Nonetheless, it is an instructive episode that should prepare the country's leadership to face its next foreign policy crisis with a confidence tempered by prudence and experience. The next crisis of a similar ilk would certainly put the government to a stern test not just of astuteness, but of memory.

Endnotes

1 Colonel (Ret.) Charlie Beckwith and Donald Knox, *Delta Force* (New York: Harcourt Brace Jovanovich, 1983), 218-219.

2 Official name: Special Forces Operational Detachment Delta (SFOD-D).

3 Paul B. Ryan, *The Iranian Rescue Mission: Why It Failed* (Annapolis: Naval Institute Press, 1985), 2.

4 Gregory M. Herek, Irving L. Janis and Paul Huth, "Decision-Making During International Crises: Is Quality of Process Related to Outcome?", *Journal of Conflict Resolution*, Vol. 31 No. 2, June 1987.

5 Philip M. Rosenzweig, "Judgment in Organizational Decision-Making: The Iranian Hostage Rescue Mission," 1993: 29.

6 Rosenzweig, 26.

7 In 1976, terrorists had forced a French airliner to land in Entebbe, Uganda, and seized its Israeli and Jewish passengers as hostages. Israel launched a successful counter-terrorist rescue operation in response. In 1977, German counter-terrorist troopers had launched a successful similar effort with a seized Lufthansa airliner which was forced to land in Mogadishu, Somalia.

8 Entebbe and Mogadishu were airport locations which the Israeli and German assault forces could access with relative ease and secrecy, unlike Tehran which was deep in enemy country. Emphasis added.

9 Beckwith, 188.

10 Gary Sick, "Military Constraints and Options" in *American Hostages in Iran: The Conduct Of A Crisis*, ed. Paul H. Kreisberg (New Haven: Yale University Press, 1985), 154.

11 Steve Smith, "Groupthink and the Hostage Rescue Mission," *British Journal of Political Science*, Vol. 15 No. 1 1984: 117.

12 Rosenzweig, 31.

13 Alexander George, "Some Possible (and Possibly Dangerous) Malfunctions of the Advisory Process," 122.

14 Rosenzweig, 35.

15 Rosenzweig, 15.

16 Barry Posen, *The Sources of Military Doctrine* (Ithaca: Cornell University Press, 1984).

17 Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Massachusetts: Harvard University Press, 1957), 69.

18 Beckwith, 199.

19 Beckwith, 200.

20 Based on a lecture by Prof Scott D. Sagan, Stanford University, for course "International Security in a Changing World." Winter Quarter, 1999.

21 See Rosenzweig, 22-24. For instance, consider a military operation with five segments. Even if each segment has a high chance of success, like 95%, the probability of success for the whole mission is much lower at 77%. This suggests that if the mission had been planned more in line with the KISS ("Keep it simple, stupid") military maxim, with fewer conjunctures, it might have had a higher chance of success.

22 Christopher, 154.

23 Charles G. Cogan, "Not to Offend: Observations on Iran, the Hostages, and the Hostage Rescue Mission Ten Years Later," *Comparative Strategy* Vol. 9, 1990: 423.

24 Cogan, 426.

25 Ryan, 69-76.

26 With regards the importance of tactical details on the ground in any ambitious military strategy, we should be mindful of the verse:

For want of a nail, the shoe was lost

For want of a shoe, the horse was lost

For want of a horse, the rider was lost

For want of a rider, the battle was lost

For want of a battle, the kingdom was lost!

27 Beckwith, 282.

28 From a course lecture by Prof. Stephen Krasner, Stanford University, for course titled "International Politics," Autumn 1999.

29 Col. (Ret.) James H. Kyle with John Robert Eidson, *The Guts to Try: The Untold Story of the Iran Hostage Rescue Mission By the On-Scene Desert Commander* (New York: Orion Books, 1990), 335.

30 Kyle, 292.

31 Herek et al, 205.

32 Ryan, 70.

Bibliography

Beckwith, Colonel (Ret.) Charlie, and Donald Knox, *Delta Force* (New York: Harcourt Brace Jovanovich, 1983).

Cogan, Charles G. "Not to Offend: Observations on Iran, the Hostages, and the Hostage Rescue Mission Ten Years Later." *Comparative Strategy* Vol. 9, 1990.

George, Alexander. "Some Possible (and Possibly Dangerous) Malfunctions of the Advisory Process," Article used in class Political Science 139B: Foreign Policy Decision Making (Barry O'Neill), Autumn 1999.

Herek, Gregory M., Irving L. Janis and Paul Huth, "Decision-Making During International Crises: Is Quality of Process Related to Outcome?" *Journal of Conflict Resolution*, Vol. 31 No. 2, June 1987.

Huntington, Samuel P. *The Soldier and the State: The Theory and Politics of Civil-Military Relations*(Cambridge, Massachusetts: Harvard University Press, 1957).

Kyle, Col. (Ret.) James H., and John Robert Eidson. *The Guts to Try: The Untold Story of the Iran Hostage Rescue Mission By the On-Scene Desert Commander*, (New York: Orion Books, 1990).

McRaven, William H. *Spec Ops: Case Studies in Special Operations Warfare: Theory and Practice* (San Marin: Presidio Press, 1996).

Posen, Barry. *The Sources of Military Doctrine* (Ithaca: Cornell University Press, 1984).

Rosenzweig, Philip M. "Judgment in Organizational Decision-Making: The Iranian Hostage Rescue Mission," 1993.

Ryan, Paul B. *The Iranian Rescue Mission: Why It Failed* (Annapolis: Naval Institute Press, 1985).

Sick, Gary "Military Constraints and Options" in Paul H. Kreisberg (ed) *American Hostages in Iran: The Conduct Of A Crisis* (New Haven: Yale University Press, 1985).

Smith, Steve. "Groupthink and the Hostage Rescue Mission." *British Journal of Political Science*, Vol. 15 No. 1, 1984.



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Deterrence and Coercion for Air Forces of Small Nations

by LTA Ng Pak Shun

"The options open to small nations are inevitably limited. [They] do not have the necessary resources or power to control the external environment. At the same time, [their] fortunes are tied to the vicissitudes of this external environment. But what [they] can and must do is to try and influence the international agenda in order to maximize [their] options and ensure [their] survival and prosperity."

Mr Lim Hng Kiang in *The Challenges to a Small Nation's Foreign Policy*¹

Small nations typically depend on sound diplomatic and deterrent defence policies for existential survival. Their small size prevents them from destroying stronger and bigger adversaries completely. They are also often under their bigger counterparts' military and political pressures to remain passive from tension-escalation to eventual war. Thus, they usually have to pursue a deterrent strategy that deters any potential attacks with costly, painful consequences. In this essay, I propose a more proactive strategy for the air forces of small nations to support their respective armed forces. This strategy can cater for both offensive and defensive contingencies, and thus improve a small nation's position in Periods of Tension (POT) and war.

Concept of Deterrence

"There is a difference between fending off assault and making someone afraid of assaulting you ... losing what someone can forcibly take and giving it up to avoid risk or damage. It is the difference between defence and deterrence."

Thomas Schelling²

To Schelling, the acts of threatening and bargaining are the two essential elements for successful deterrence. They explain the important differences between deterrence and defence while the defender's display of military might aims to make the aggressor consider its offensive intentions, the use of military power serves to defend simply by inflicting pain.

Instead of using actual force, the ability to mete out the threat of military actions figures in successful deterrence. However, deterrence is useless unless an adversary understands the implications of the threat and changes its actions accordingly to some desired behaviour before the threat materializes. This process of "communicating what must be done to avoid pain and reacting to the adversary's responses"³ constitutes bargaining. From American bombers in England to Soviet missiles in Cuba, countries had bargained through force posturing to prevent crises from escalating to actual wars. Without the exchange of threats, deterrence would not have worked.

However, aggressors will only believe in credible threats of military consequences. The defender must thus be prepared and perceived to be prepared to carry out military actions. Secure nuclear second-strike capabilities for two countries (A and B) improve the credibility of mutual assured destruction (MAD),⁴ thus deterring both parties from preemptive attacks in a nuclear crisis.⁵ B can also extend its protection over a non-nuclear-capable nation (C) against A,⁶ albeit with caveats.⁷ In all cases of deterrence, both attackers and defenders aim to shift the initiative of starting an actual war to their opponents by manipulating the levels of credibility that are associated with their actions. The side that is perceived to merely react to a military conflict would then be spared of shouldering the bulk of military, civilian and political repercussions.

In essence, deterrence aims to control an adversary by credible threats of military retaliation through displaying the "power to hurt", and successful conveyances of these threats through convincing bargains.

When successfully implemented, threats and bargains improve one's credibility and hold its adversary accountable for going to war. In the end, defence only deters when the costs of defying threats are high and real, or extremely likely.

Concept of Coercion

Coercion is the use of threatened force, including limited actual force to back up the threat, to induce an adversary to behave differently...

*Air Force as a Coercive Instrument*⁸

Coercion is an often-mentioned concept in military literature that has no clear doctrine or definition. While some international security scholars describe coercion in terms of compellence and deterrence,⁹ I will limit my scope of coercive theory to only the element of compellence¹⁰ to illustrate the difference between coercion and deterrence.

For Schelling, compellence aims to influence an adversary by destroying what it values or needs for its strategy. Thus, compellence alters the current state of affairs while deterrence preserves the *status quo*. Similarly, Pape distinguishes between coercion and deterrence. To him, deterrence uses different postures to prevent an adversary from initiating a specific action. Coercion is different, since the coercer aims to change its adversary's ongoing actions through a limited response to affect calculations of military benefits and costs. George and Simons further expand on Schelling's concept of compellence. In their argument, an adversary would rather be coerced to desist from a partially achieved goal (stop short of goal) than relinquish what has already been acquired (undo action).¹¹

While coercion has often been viewed as an offensive strategy that creates heavy casualties, its success should not be gauged by combat effectiveness.¹² Indeed, coercion fails if even tremendous deaths and destruction cannot force an adversary to concede. Thus, the adversary should be made to react via anything short of actual force, while the coercer should be capable of activating contingencies without actually resorting to them.¹³

Prerequisites for Successful Coercion

When limited "between making concessions or suffering the consequences of continuing its present course of action,"¹⁴ a coercer hopes to influence its adversary towards the former choice. However, favourable conditions and suitable strategies are necessary to improve the chance of coercive success. An effective coercer must be able to raise the level of cost that its adversary associates with some specific actions. However, as both attackers and defenders can coerce each other, only the coercer with coercive superiority can withstand the opposition's coercive countermeasures and achieve ultimate coercive success. A state can also level third-party threats against its adversary to achieve its goals.¹⁵ As an increase in possible opponents¹⁶ (perceived or real) divide up an adversary's attention span, it would be less willing to prolong its offensive stance. An aggressive state would have limited opportunities to escalate conflictual relationships until the final stages of war, making coercion possible.

Major coercive efforts in the past generally employed three coercive strategies. Coercion is most effective in compelling concessions without achieving complete victories in historical events when a state targets its opponent's strategic weaknesses.¹⁷ Thus, the strategy of "denial" works best for coercion, as it diminishes the adversary's military incentive to continue with aggression by decreasing the benefits component of the resistance equation.¹⁸

Strategic Effectiveness for Coercion: Punishment, Decapitation, Denial

- **Punishment Strategy**

A strategy of punishment basically "punishes" a state's civilian population. By inflicting civilian casualties and destroying civilian infrastructures,¹⁹ the aggressor aims to break the will of the people and cause a popular revolt. Douhet emphasizes this "punishment" element by advocating heavy, merciless bombing on these civilian targets.²⁰ In reality, this strategy seldom works, as civilians are usually autonomous of military forces. The livelihoods of civilians do not really affect military operations, making counter-civilian attacks pointless. Furthermore, this concept is prone to backfire because the generated emotional stress often "reduces rather than increases collective action against the government."²¹ Popular demands for reprisal strengthen civilians' resilience till the end of the war, defeating the purpose of coercion.

- **Decapitation Strategy**

Among many supporters of the decapitation strategy,²² John Warden champions the use of air power to topple an adversary's government and halt a military contest. He ranks targets for attack with the most important in the core of five concentric rings. In order of importance, these five rings consist of government leaders, critical industries, infrastructure, civilians and military personnel. A state that makes use of decapitation relies on successful assassinations, coups, communication breakdown, or civilian revolts to snuff out its opponent's military effectiveness.²³ However, previous assassination attempts of the heads of governments have generally failed²⁴ as leaders are well protected from disenchanting elements. Prioritizing counter-civilian attacks over military confrontations also produces the same problems of the punishment strategy. These factors render the decapitation strategy ineffective.

- **Denial Strategy**

To coerce with a strategy of denial, a coercer targets the opponent's ability to attain its political or territorial goals. When the adversary's ambitions are sufficiently thwarted, it would be compelled into making concessions to avoid "futile expenditure of future resources." The effectiveness of this strategy depends on the point a coercer has to fight before attaining concessions and the speed the adversary perceives making concessions to be a better option. Coercion by denial succeeds when the coercer attains concessions well short of a complete victory, as the adversary is made to believe that concessions are less costly than continued resistance. While denial strategies offer a higher probability of success than that of punishment or decapitation, a coercer can only secure concessions over territories that are peripheral to its opponent. The coercing state must also prevent its adversaries from restoring their capabilities of disputing territorial claims after limited strikes. Finally, a denial strategy necessarily incurs high fixed costs. Even if the coercer avoids the actual costs of victory, it still has to pay for the preparations of military victory.

A Small Nation's Air Force: Inherent Strengths and Constraints

While small nations can deter rational foes with their people and technology, an irrational decision from potential foes can start a war of all proportions. In this scenario, a small nation is simply too small to last a protracted war of attrition. With the desire to end military commitments quickly, she must rally her military strengths to offset inherent limitations to compel behavioural changes in her potential adversaries.

- **Space Constraint**

In any military campaign, a small nation's war plans need to address three critical constraints. First, she would be severely limited in space *vis-à-vis* her local areas of operation (AO). This is especially pertinent for her air force, since she can only operate in an extremely small airspace that houses a disproportionately large amount of traffic. If the air force of a small state were merely content with

using her military might to deter potential adversaries, she would have little manoeuvrability if deterrence flops. Even if a country can attain air superiority, the anticipated level of air traffic congestion will hamper any reactionary air force in providing tight air defence. Overseas detachments could give pilots of small states vast regions of airspace, not available locally, to practise their manoeuvres and profiles freely. This can also relieve civilian and military air traffic controllers of high-density radar plots. However, their entrance into the miniscule AO only after an adversary's first strike would clutter the skies. Pilots, controllers and ADA operators would find it harder to prevent fratricide, a potent threat in a highly occupied airspace. Space constraints not only limit a small nation in housing her aircraft, it also reduces areas within her borders for land-based air defence deployments. Training value of ADA exercises in peacetime would have unavoidably been less than optimal because of the lack of proper areas for realistic field engagement simulation. In POT and war, it is highly likely that an enemy can slip through the highly deterrent air defence umbrella. ADA components would then have to work with limited operational experiences to counter air threats, reducing the overall effectiveness of air defence. Since there are no safe areas in a small country for her air defence elements to retreat, consolidate forces and strengthen counter-offensives, this lack of strategic depth could be fatal if her mindset were to be reactionary.

- **Time Constraint**

Second, a small nation does not have the luxury of time to react to defence breaches when deterrence falls short of its goals. As current technology allows aircraft and missiles to travel quickly, a country could be reached from hundreds of miles away within a matter of minutes. Even if a small state were ready to address materializing threats, she would still be hard pressed to act promptly. The recent Gulf War showed that modern armed forces could deploy swiftly across oceans and continents. While potential foes can come from all parts of the globe, a small state is especially vulnerable to nearby threats. Any attack from her area of interest would give her little time for effective response, even with her defensive postures and signals. If she had only a retaliatory mentality, any potential adversary would take advantage of the preparatory time-lapse to launch a surprise strike. It would thus be suicidal for a small nation to make firm military gestures only upon attack from the enemy.

- **Populace Constraint**

Third, casualty sensitivity is another major constraint in a small country's defence plans. In a small nation, her limited populace necessarily raises the level of casualty intolerance, as she does not have the resources to fight an attritional battle or enter into a long-drawn stalemate. A quick war would require superb coordination of a skilled and proficient armed force. However, if a small nation is only prepared to retaliate, an enemy first strike that is not nipped in the bud can knock out even a small number of her active and reserve forces and curtail her defence significantly. A loss of 10,000 men in the armed forces of a small state would affect troop morale and readiness much more than a similar loss for larger armed forces.

Technological Strength

A small nation has to advance technologically to maintain her deterrence posture. However, her advantage in military technology further weakens, instead of strengthens, the rationale for a defensive strategy. Her miniscule size makes annihilation easy as a finite number of conventional bombs or surface-to-surface missiles can effortlessly wipe out a critical percentage of a small nation's landmass and paralyse any civilian or military operation. Only a five to ten year edge in weaponry and technology could prevent this catastrophic attack. Intensive military research and development is thus essential. However, the announced need for quick deployment and launch reaction with advanced technology in a deterrent posture could, and should, be translated into viable options for a successful coercive strike-back. Regardless of whether a small nation is willing to risk the repercussions, her armed forces must be more than capable of carrying out more proactive missions. Survivability, stealth, and other components of a successful coercive attack should be

available to her air force simply by virtue of her superior defensive arms buildup for deterrence. Rather than limiting technological advances to purely defensive parries, a small nation should exploit the potency of her technological edge in the event necessitating a resounding and yet limited strike. With a lopsided technological advantage, the chance of a coercive threat escalating into a full-fledged war should be more frightening to any aggressor than to the small state.

Application for a Small Nation's Air Force

A small nation must possess an air force that is superior in specifications and technology to regional air forces in her aircraft, system controls and ADA weapons for effective deterrence. Her personnel must consistently benchmark their expertise against airmen of much more established air forces in the world. Only these indicators can reflect the readiness of her air force to deter potential aggressors. However, if hostile aircraft can slip through her multi-layered air defence upon massive waves of attack, a small nation's inherent limitations make a swift and decisive victory very difficult with only a static strategy of deterrence. Still, with an appropriate shift in focus, any small nation's air force can contribute greatly to the success of coercive denial and control the duration and outcome of a future war to her advantage much more effectively. Of course, a small state must expect to be under pressure from her neighbours for adopting a seemingly aggressive strategy of coercive denial for defence. Nevertheless, this should be incorporated as part of her general stance of defence to win a war quickly. If coercion becomes an integral part of a small nation's defensive strategy, this declaration will be a greater deterrent than previous threats of retaliatory actions. A promise to deny potential opponents of military benefits can refine the coercer's threats and bargains for deterrence. This would improve the chance of successful deterrence, which would allow the levels of tension to de-escalate sooner. When it is necessary to strike back with a limited force, a small state can compel a quick concession by affecting her opponent's calculations in prolonging an ongoing war at an earlier stage, reducing destruction of properties and casualties to both sides. Thus, a restrained and announced show of force can force the enemy to stop any nascent aggressive moves even with deterrence failure.

Basically, a small nation can exact a swift victory without engaging in a full, military encounter. By making the potential aggressor understand that further moves in a war are in vain, she can exact great pain and costs on her opponents without inflicting great damage on herself. To achieve that, the air force must rearrange her procurement priorities to reflect both her defensive intentions and offensive readiness. New acquisitions can be unpalatable because they can destabilize the region and spark off a possible arms race. Still, the air force should fully exploit air power through judicious arms procurements to strengthen its deterrence posture, while ensuring its quick success in a future war. Deterrence and coercion can work hand in hand to ensure a small nation's survival.

Utilising Air Power in Coercive Operations

The Gulf War illustrated the potency of air power in eradicating a huge variety of targets quickly and decisively with few casualties for the Allied Forces. With air power, one can destroy a range of targets accurately, support ground operations, and sustain high-intensity combat postures against opponent military targets. These capabilities would allow any small nation to satisfy the conditions of successful coercion. However, her air force should not focus only on her destruction capabilities. A target can often be destroyed without making the target state change its behavior, which is the actual objective of coercion. Although "what can be seen...can be hit, and what can be hit can be destroyed,"²⁵ the air forces of small nations should procure suitable weapon systems as defensive and offensive leverages against their opponents' counter-coercive-superiority, counter-intervention and counter-counter-strategy moves.

Judicious Procurements

Air power can minimize counter-coercive effectiveness by controlling the tripartite battlefield through air superiority to minimize damage and casualties. However, air superiority alone is not enough in a future war.

A small nation's air force must have weapons that are highly accurate in target identification and acquisition to ensure destruction of hostile elements without incurring heavy loss of human life.

Support of the United Nations

The United Nations (UN) is one viable internationally recognized institution that any small nation should count on to leverage third-party threats against her adversaries. Indeed, the UN has been described as the "most effective protector, indeed the only defence available for small nations against big powers and bullies around the block."²⁷ It has shown its resolve and readiness to intervene in illegitimate encroachments of its member states.²⁸

However, to ensure the UN's prompt diplomatic and military intervention when a small nation is under an illegitimate attack, she must be proactive in the international stage. From humanitarian relief with supplies of food and necessities to commanders and soldiers for peacekeeping deployments, it is in the interest of any small nation to support the UN community quickly. The UN's credibility depends on her response when its active member states require its reciprocal support. Thus, a small state must actively seek her place in UN missions to give the UN a stake in her survival. A small state's active international presence is essential to her survival, and her air force should continue to equip herself for greater co-operations with the rest of the world.

Counter-coercive-superiority Threats	Procurements	
Ballistic/Surface to surface missiles	Aircraft	Precision Guided Munitions (PGM)
	C3	Quicker IFF
	ADA	Surface to Surface Missiles
Heavy casualties (friendly or foe)	Aircraft	UCAV, Non-Lethal Weapons
	C3	UAV, accurate IFF to prevent fratricide
	ADA	Increase in range of SAM systems
Hostile aircraft attack	Aircraft	Beyond-visual-range AAM, AWACS
	C3	Integrated system with quick information dissemination
	ADA	Fire-on-the-move SAM, All-weather & night capability, slew-to-cue capability ²⁶

Mechanised and Information Warfare

Unfortunately, air power is ineffective against certain military strategies. It is particularly weak against guerilla warfare, where there are no large targets to be destroyed and no long supply lines to be cut. The failure of the US air campaign in *Operation Rolling Thunder* during the Vietnam War is one prime example. On the other hand, successes in *Operation Linebacker* at the later stages of the Vietnam War and *Operation Desert Storm* during the Gulf War reveal the strength of air power in overwhelming conventional forces. Therefore, a small state's air force should employ air power as a coercive instrument especially against operations that involve considerable mechanized forces and large logistics efforts.

More importantly, however, she must use her air assets to achieve dominant battlefield awareness in information warfare²⁹ to curtail the effectiveness of her opponent's military strategy. An integrated command, control and intelligence network with faster response time can reduce the time to seek and destroy a target dramatically. Thus, the C3 component of the air force must aim to shorten the sensor-to-shooter loop by providing air picture directly into the cockpits of her fighters and PPIs of her air defence weapons through system upgrades. She must also be ready to deny or corrupt her adversary's information base by deploying Precision Guided Missiles (PGM) at the enemy's central communication bases and using electronic warfare assets to generate falsified information. Similarly, information security is paramount to minimize a small state's vulnerability in these aspects. Churchill once said, "Truth is so precious that she should always be attended by a bodyguard of lies."³⁰ Therefore, to improve her chances of defeating any military strategy, a small state's air force must have an integrated system of control that provides tremendous situational awareness and informational security against threats to all her elements.

Conclusion

"The (small) Baltic states are committed to exact politically unbearable losses on any invaders last until the arrival of international assistance or to provide time so that other countries and the international community can react to the events create elementary defence systems and strengthen the conviction that armed resistance will be shown regardless of their aggressor's military might."

*Baltic States: Cooperation on Security & Integration into the European Security System*³¹

A small nation's limitations dictate her defence policy for existential survival. However, her technological advantage presents opportunities for effective coercion. Any small nation would certainly not be welcomed to declare coercion as part of her strategy of deterrent defence. Still, her limitations necessarily call for a more active approach in protecting her national sovereignty. Applied correctly, coercion allows a small state to produce desired results with the least repercussions. In the end, any small nation aims to avoid war. When incorporated with the overall scheme of deterrence, coercion can become a strong deterrent factor. If all things fail, coercion can provide quick and decisive strikes to limit damages and casualties and secure a swift victory. For a small nation's air force, judicious procurements must be undertaken to strengthen her coercive capabilities, which must inevitably sharpen her deterrent edge.

Endnotes

1 Lim Hng Kiang, "The Challenges to a Small Nation's Foreign Policy", in <http://www.mita.gov.sg/speech/speeches/v19n4008.htm>.

2 Thomas Schelling, in *Arms and Influence* (Greenwood Publishing Group, Feb. 1977), pp. 2-5

3 MAJ William S. Huggins, USAF, "Deterrence after the Cold War", in *Airpower Journal* (Sum 1993).

4 Robert Jervis, in *The Meaning of the Nuclear Revolution* (Cornell University Press, 1989), pp 74-82. There are generally 4 versions of MAD (MAD-1,2,3,4). MAD-1 (the simplest version) denotes a situation in which "the state threatens to inflict 'unacceptable' damage on the adversary by aiming its nuclear forces at what it believes the other side values "

5 Herman Kahn, in *On Thermonuclear War* (Princeton University Press, 1960), pp. 8-13. This first type of deterrence is known as Type I deterrence.

6 Ibid. This second type of deterrence is known as Type II deterrence.

7 Jervis, p. 20. This problem of credibility is known as the *stability-instability paradox* "Strategic stability creates instability by making lower levels of violence relatively safe and undermining 'extended deterrence' the threat to use strategic nuclear weapon to protect allies." In other words, if A were to use conventional forces against C, B might not want to retaliate with nuclear weapons.

8 Byman, Daniel, Waxman, Matthew C., and Larson, in *Air Power as a Coercive Instrument* (Santa Monica, CA: RAND Corp., MR-1061-AF, 1999).

9 Schelling, pp. 2-91.

10 Robert Pape, in *Bombing to Win* (Cornell University Press, 1996), p. 4. Pape, Schelling and Robert J. Art also take pains to differentiate between coercion and deterrence.

11 Alexander George and William Simons, in *The Limits of Coercive Diplomacy* (Boulder, CO.: Westview, 1994), pp. 280-288.

12 Pape, pp. 56-58. Combat effectiveness "describes how efficiently a given force destroys a given target set, that is, how well bombs destroy targets "

13 MAJ Mark A. Bucknam, "Lethal Airpower and Intervention (Thesis for Graduation Requirements)", in *Air University* (Jun 1996).

14 Pape, p. 12.

15 This argument draws parallel with attaining stability in a multi-polar world by Singer and Deutsch, "Multipolar Power Systems and International Stability", in *World Politics* (Vol. 16, 1964), pp. 390-406.

16 These opponents exist in the form of external foes and internal political unrests, as detailed in *Air Power as a Coercive Instrument*.

17 Pape, pp. 12-55.

18 Ibid. The exact form of the equation is $R = Bp(B) Cp(C)$, where R=resistance, B=military benefits, p(B)=probability of obtaining benefits, C=military costs, and p(C)=probability of incurring costs.

19 COL John F. Shiner, "Reflections on Douhet, the Classic approach" (Nov 1999), in <http://www.airpower.maxwell.af.mil/airchronicles.aureview/1986/jan-feb/shiner>.

20 Ibid. These civilian targets include aqueducts, railroads and power stations.

21 Pape, p. 25.

22 Pape, p. 56. Decapitation variants include individual, political (coup), and military (comms breakdown).

23 John Warden, "Employing Air Power in the Twenty-first Century", in *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell AFB: Air University Press, 1992), pp. 57-69. This plan of attacking the centers of gravity from the core of the concentric rings is known as the "inside-out" plan.

24 These leaders include Gaddafi and Saddam (twice in *Operation Desert Storm* and *Operation Desert Fox*).

25 Eliot Cohen, "The Mystique of Air Power", in *Foreign Affairs* (Jan/Feb 1994).

26 Scott Gourley, "Owning the High Ground", in *AFJI* (Dec 2000), pp. 28-35. Slew-To-Cue (STC) capability allows ADA weapons to take digital early warning data and automatically slew their turret in both azimuth and elevation, centering the threat target in the gunner's field of view.

27 Tan Sri Abdullah Ahmad, Malaysian envoy to the UN, "The Politics in the World Body", in <http://www.mir.com.my/lb/un/99html/160599.htm>.

28 Recent cases of UN intervention include peacekeeping force deployments to Kosovo for humanitarian relief to the region and East Timor for assistance in its transition to an independent country.

29 GEN Fogleman, USAF, "Fundamentals of Information Warfare An Airman's View", in http://www.af.mil/news/speech/current/FUNDAMENTALS_OF_INFORMATION.html. In his definition, information warfare (IW) aims to gain and exploit information of the enemy, deny or corrupt an adversary's information databases, and protect friendly command and control systems.

30 Churchill, quoted in *Times* to Stalin in Teheran for defending his mendacity during WWII.

31 Talavs Jundzis, "Baltic States: Cooperation on Security & Integration into the European Security System," in <http://www.nato.int/acad/fellow/94-96/jundzis/03.htm>.

Bibliography

Books

Thomas Schelling, in *Arms and Influence* (Greenwood Publishing Group, Feb. 1977)

Robert Jervis, in *The Meaning of the Nuclear Revolution* (Cornell University Press, 1989)

Herman Kahn, in *On Thermonuclear War* (Princeton University Press, 1960)

Byman, Daniel, Waxman, Matthew C., and Larson, in *Air Power as a Coercive Instrument* (Santa Monica, CA: RAND Corp., MR-1061-AF, 1999)

Robert Pape, in *Bombing to Win* (Cornell University Press, 1996)

Alexander George and William Simons, in *The Limits of Coercive Diplomacy* (Boulder, CO.: Westview, 1994)

Articles

Lim Hng Kiang, "The Challenges to a Small Nation's Foreign Policy", in <http://www.mita.gov.sg/speech/speeches/v19n4008.htm>

MAJ William S. Huggins, USAF, "Deterrence after the Cold War", in *Airpower Journal* (Sum 1993)

MAJ Mark A. Bucknam, "Lethal Airpower and Intervention", in *Air University* (Jun 1996)

Singer and Deutsch, "Multipolar Power Systems and International Stability", in *World Politics* (Vol. 16, 1964)

COL John F. Shiner, "Reflections on Douhet, the Classic approach" (Nov 1999), in <http://www.airpower.maxwell.af.mil/airchronicles.aureview/1986/jan-feb/shiner>

John Warden, "Employing Air Power in the Twenty-first Century", in *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell AFB: Air University Press, 1992)

Eliot Cohen, "The Mystique of Air Power", in *Foreign Affairs* (Jan/Feb 1994)

Scott Gourley, "Owning the High Ground", in AFJI (Dec 2000)

Tan Sri Abdullah Ahmad, Malaysian envoy to the UN, "The Politics in the World Body", in <http://www.mir.com.my/lb/un/99html/160599.htm>

GEN Fogleman, USAF, "Fundamentals of Information Warfare An Airman's View", in http://www.af.mil/news/speech/current/FUNDAMENTALS_OF_INFORMATION.html

Talavs Jundzis, "Baltic States: Cooperation on Security & Integration into the European Security System," in <http://www.nato.int/acad/fellow/94-96/jundzis/03.htm>



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Security By Other Means: The Role of Free Trade Agreements in Singapore's Economic Security

by LTA (NS) Toh Boon Ho

The end of the Cold War at the dawn of the last decade of the 20th century heralded the re-conceptualisation of national security from a distinctly military focus towards a more comprehensive multi-faceted definition. As direct external military threats to nation-states receded with the end of the Cold War, attention shifted towards other aspects of national security. A development-oriented security focus, with its emphasis on trade and economics, socio-economic development and environmental protection was added to the traditional military dimension of national security. In particular, the impact of globalisation upon national economic capacities became increasingly important. Economic security, therefore, assumed a new level of importance.¹

Economic Security

The renewed emphasis on economic security is probably best embodied in Paul Kennedy's influential 1987 study on the rise and fall of the great powers. In his study, Kennedy identified the key role played by a great power's underlying economic strength as the determinant of its military strength and therefore, ability to assume a leadership position on the global stage. Sustained military capacity and dominance in international affairs can only be achieved through resilient and strong national economies relative to other competing great powers. In turn, military capacity and ultimately military capabilities have to be developed to protect and secure these all-important national economic interests.²

What constitutes economic security? To put it simply, economic security "entails the maintenance of given levels of welfare and state power through access to resources, finance and markets."³ Whereas in the past, economic competition for scarce resources could lead to, and have led to inter-state conflicts, the post-Second World War world has been marked by the rise of neo-liberalism in the international economic system. Inter-state conflicts over scarce resources, access to finance and markets have become increasingly untenable in an increasingly rules-based international economic system dominated and mediated by international intergovernmental institutions. This positive development was largely overshadowed by the sharp ideological conflict and the over-riding emphasis on military security which governed international relations during the Cold War.

Parallel to the Cold War confrontation between the two superpowers was the ascendancy of globalisation and its effective institutionalisation through various international intergovernmental institutions. Globalisation is not a new phenomenon discovered in the aftermath of the Cold War. Its emergence can be traced to the global expansion of the European powers from the late 15th century in their search for trade opportunities. These early origins heralded the rise of capitalism and marked the development of the modern international trading system. Immanuel Wallenstein's World Systems Theory with its strong critique of capitalism only confirmed the dominant role played by capitalist structures in global economics. The collapse of communism as a distinct rival economic system marked capitalism's triumph as the unrivalled global economic system.⁴

Singapore's Foreign Economic Policy

Singapore's small size belies its significant share of global trade flows. Based on latest figures, Singapore is the world's 15th largest exporter of goods and services.⁵ This achievement is no small feat for a small island-state without any natural resources. Trade created Singapore's prosperity and constituted its lifeline. Without global trade, there can be no Singapore since Singapore is "an international creation for purposes of trade".⁶ Without the contribution of trade, Singapore would have 15 times less population and wealth over the 20th century.⁷ Singapore's dependence on trade is reflected by its trade statistics: Total trade is three times the GDP figure.⁸

Singapore's economic success hinged on its unfettered embrace of globalisation. By integrating into the global production network dominated by the Multinational Corporation (MNC) early in Singapore's economic development, Singapore became "an early exemplar and willing beneficiary" of globalisation which propelled it from Third World to First World status in one generation. Globalisation had served Singapore well.⁹

In its quest for economic security, Singapore is committed to the maintenance of "an open global and regional trading regime".¹⁰ Unlike traditional notions of national security based on military strength, the security imperative of a vulnerable island-state is dependent upon economic strength rather than military prowess. Singapore's national leaders recognised the fundamental importance of economics in ensuring the viability of a vulnerable small state. Yet, this is not to negate the importance of military security. Rather, a credible military deterrent can only develop on the basis of economic strength.¹¹ In the debate over the primacy of guns or butter, Singapore's grand strategy is to recognise both elements as equally crucial in assuaging its inherent vulnerabilities. A judicious balance of both elements lay in the continued success of the Singapore Story.¹²

In pursuit of Singapore's economic security, Singapore acceded to the General Agreement on Tariffs and Trade (GATT) in 1973. To protect and expand its trade interests, it became imperative for Singapore to join the neo-liberal, multilateral economic trading system embodied in the GATT.¹³ For a small, trade dependent island-state, the principles of free trade embodied in the GATT and its successor organisation, the World Trade Organisation (WTO) were crucial in establishing the rule of law in a realist world that placed small states at a distinct disadvantage. The principles support "a system of rules dedicated to open, fair and undistorted competition" that guarantee non-discrimination between countries and their trading partners in trade relations.¹⁴ Through several rounds of multilateral trade negotiations, progressive liberalisation of trade barriers creates freer trade through the gradual removal of obstacles to trade.¹⁵ Greater predictability in trade results as governments are bound to their commitments at the trade rounds. Tighter disciplines restrict arbitrary moves to introduce non-tariff barriers that distort otherwise competitive trade flows.

The most ambitious trade negotiations to date came with the Uruguay Round (1986-1994).¹⁶ Lasting seven long years and covering an unprecedented number of new issues previously not negotiated, it was threatened with derailment and abject failure at various points in the long negotiation process. Singapore's involvement in the Uruguay Round was critical to its foreign economic policy. The Uruguay Round, though ambitious, could reduce trade barriers dramatically and provide a tremendous boost to global free trade. Being an open economy heavily dependent on global trade flows, it was imperative to Singapore's interests that the Uruguay Round succeeded. However, the multilateral trade negotiations were fraught with obstacles created by political concerns on sensitive subjects like agriculture for many developed and developing countries. In particular, major differences existed between the US and the European Community (EC) over the explosive issue of agricultural subsidies.

From Singapore's perspective, it became necessary to augment its meagre negotiating power as a small economy through alliances with powerful trade partners. The creation of the Asia-Pacific Economic Cooperation (APEC) forum in 1989 in the midst of the Uruguay Round was not a coincidence. It constituted an attempt to link up like-minded trade partners to achieve a successful conclusion to the Uruguay Round. APEC was therefore conceived as a strategic pressure point to create forward momentum on the Uruguay Round.¹⁷ With three Quad¹⁸ members in its membership, APEC's potency lay in its potential to develop into a regional trade bloc. The establishment of an APEC-wide preferential trade arrangement among its members would create intra-trade flows within an internal market similar to the situation existing in the EC. This strategic move to isolate the EC was used in the aftermath of the failure to conclude the Uruguay Round in 1990. APEC member countries threatened to expand APEC into a preferential regional trade arrangement if the EC continued to stall progress leading to a successful conclusion of the Uruguay Round.¹⁹ Through APEC membership, Singapore was able to leverage on the collective strength of its economic allies to attain the goal of furthering global trade liberalisation that was not inimical to Singapore's interests.

Translating words into action, Singapore worked actively with its ASEAN partners to create the ASEAN Free Trade Area (AFTA) in 1992. As Singapore's first free trade agreement, AFTA's purposes were two-fold. First, it was a strategic move to cope with the fallout from failure of the Uruguay Round. AFTA created new market access opportunities within ASEAN for Singapore's exports in a preferential trading

arrangement.²⁰ Second, to create an effective pressure point. The intent was to remind countries opposed to the Uruguay Round that their trade interests would be hurt if countries resorted to preferential trading arrangements to secure what could not be agreed at the multilateral level. In effect, AFTA's creation was ironically, a means to help secure a successful conclusion of the Uruguay Round.

In spite of Singapore's efforts within ASEAN and APEC, the key development that prompted the EC to move decisively on the Uruguay Round was the creation of the North American Free Trade Area (NAFTA) in 1993. This development, together with the developments in APEC and AFTA, created seismic strategic shifts in the global trade environment that pushed the EU to resolve its differences with the US and remove its final opposition to the Uruguay Round in late 1993. Singapore played a facilitative role in creating conditions leading to the successful conclusion of the multilateral trade talks. As an acknowledgement of Singapore's constructive role in the entire negotiating process, Singapore was elected as the inaugural Chairman of the WTO's General Council in 1995. Despite this tribute, the underlying weakness of Singapore's ability to decisively dictate the multilateral agenda was abundantly clear. On its own, Singapore could not shape the global multilateral agenda. But as an honest broker and opinion shaper, Singapore could influence the major trading powers like the US, Japan and Canada to act in concert to achieve a favourable outcome that safeguarded Singapore's core economic interests.

The dramatic and chaotic failure of the WTO's third Ministerial Conference at Seattle in 1999 to launch a new round of global trade negotiations was not due to the triumph of anti-globalisation activists. Rather, it was a re-play of the Quads' disagreement over core issues that doomed the launch of another global trade round.²¹ From Singapore's viewpoint, despite its great efforts to galvanise like-minded pro-trade liberalisation partners to push for the launch of a new round of trade negotiations at Seattle, the combined resistance from both developed and developing countries was too much to overcome. Singapore's inability to avert the resulting fiasco was a major set-back to its long-term goal of creating a freer global trade environment. The Seattle failure once again highlighted Singapore's weakness in exercising its influence to mobilise the Quads to lobby for a new trade round launch that would clearly advance its interests. Held hostage to the interests of the Quads, Singapore had to re-examine its foreign economic policy of continued engagement within the multilateral system embodied in the WTO. An alternative strategy was required.

The 'Indirect Approach': Developing a FTA Strategy

The failure of the WTO Seattle Ministerial Conference to further trade liberalisation marked a change of tack in Singapore's foreign economic policy. While Singapore remained committed to the multilateral trading system, it developed a second approach to further trade liberalisation by engaging in bilateral Free Trade Agreements (FTAs) with interested partners.²²

Such a policy is not without its critics. Multilateralism advocates argue that the preponderance of Regional Trade Agreements (RTAs)²³ in the world serves to undermine free trade and multilateral institutions like the WTO. RTAs are an undisguised form of trade protectionism and create discriminatory preferential treatment among RTA partners. In doing so, they divert attention from multilateral fora like the WTO and create bilateral and regional trading blocs which destroy the impetus for non-discriminatory global free trade.²⁴ It is a point well noted by the WTO Secretary-General, Mike Moore:

"The recent explosion in bilateral and plurilateral deals is worrying. By definition, such deals discriminate against other countries. The longer we delay before launching a new round, the more the big players will be tempted to act unilaterally and seek improved market access through preferential trade agreements. The rule of law could gradually give way to the law of the jungle or a jumble of rules."²⁵

Critics of RTAs have reason to be fearful of the negative impact of RTAs on the overall multilateral framework. However, the reverse argument is also true. A WTO-consistent bilateral FTA incorporating state-of-the-art WTO-plus trade-liberalising provisions will have a galvanising effect on the entire multilateral trade system by setting a benchmark for future multilateral trade negotiations. Multilateral trade negotiations ultimately rest on the lowest common denominator of agreement due to the differing trade

interests of the varied WTO membership. In a bilateral FTA, the partners could aim for the highest common denominator by introducing innovative trade-liberalising provisions.²⁶

In adopting the bilateral FTA approach, Singapore was utilising an indirect approach to kickstart the stalled multilateral trade agenda. Using the APEC's Bogor Goals as a starting point, Singapore's initial choice of potential bilateral FTA partners was fellow APEC members. In partnering fellow members who were similarly prepared to further liberalise their trade regimes, Singapore was trying to play a catalytic role in advancing the trade liberalisation agenda on the multilateral front at the bilateral level. Singapore's FTA strategy started off modestly with exploratory talks with New Zealand prior to Seattle. After the failure at Seattle, full-fledged negotiations were started with New Zealand and Mexico. Singapore's FTA strategy only took off in a big way in November 2000 at the APEC Leaders' Summit in Brunei when the decision to launch a US-Singapore FTA was made by President Bill Clinton and Prime Minister Goh Chok Tong. The announcement added impetus to Japan's decision to break with its traditional multilateral stance and to commence bilateral FTA negotiations with Singapore in 2001 following a year-long joint FTA feasibility study. These two developments were ground-breaking events with the achievement of two major milestones:

- The first bilateral FTA between the US and an Asian country;
- Japan reversed its staunch opposition to regional and bilateral FTAs and embarked on its first bilateral FTA negotiations.

It is noteworthy that Japan underwent a fundamental paradigm shift to start bilateral trade negotiations with Singapore. These developments vindicated Singapore's FTA strategy. Notwithstanding these achievements, Singapore recognises that the economic benefits to be derived from bilateral FTAs with similar-minded trade-liberalising partners will be modest. Thus, the challenge for Singapore lies in persuading countries with protectionist trade agendas to come aboard as willing FTA partners.²⁷

The Strategic Dimension of FTAs:

• Engaging the External Powers

Bilateral FTAs are important policy instruments to encourage the continued American and Japanese presence in Southeast Asia to balance the rise of China. The advent of the ASEAN-China FTA poses a strategic threat to the primacy of US and Japanese regional trade interests. The competing interests between China, Japan and the US were adroitly utilised to advance Singapore's foreign economic policy. Through skilful use of the China card, Singapore was able to play on Japanese and American fears of Chinese encroachment on Southeast Asia to secure their continued engagement in the region. For China, the ASEAN-China FTA had strategic implications for its relations with the regional states. The ASEAN-China FTA constitutes a re-affirmation of China's commitment to multilateralism. At the same time, it offsets increasing fears among regional states of China's increasing economic strength which is acting increasingly as a 'giant vacuum cleaner' of Foreign Direct Investment (FDI) inflows into Asia.²⁸ With the ASEAN-China FTA, China is actively engaging in an outreach effort to ensure ASEAN will stand to gain from China's rapid economic expansion which will grow further with China's successful accession into the WTO. China's moves will translate into greater strategic room for manoeuvre and generate regional goodwill while balancing continued US hegemony in East Asia amidst a rising Chinese challenge. For Singapore, Chinese initiatives to win over regional support is a positive development which would allow Singapore to attain first-mover advantage among the ASEAN states to partake in China's economic liberalisation and further diversify its export markets amidst its worst economic recession since independence.²⁹

The tragic events of the September 11 terrorist attacks against the US created new dynamics in Singapore's economic security. On the multilateral front, the initial lukewarm US support for the launch of a new trade round at the WTO Doha Ministerial Conference in November 2001 was immediately transformed into strong resolve to launch the new trade round. The successful passage

of the Trade Promotion Authority by the House of Representatives and the US-Jordan FTA indicated American determination to use trade as an economic weapon to build up its global anti-terrorist coalition and as a means to combat terrorism on the economic front. In the post-September 11 environment, bilateral FTAs are a means for the US to engage strategically in regions of key importance, act as important rewards to key allies and serve as inducements to wavering states to join the US anti-terrorism campaign. From Singapore's viewpoint, the strategic environment has turned in its favour. The strategic reasons that persuaded the US to launch bilateral FTA negotiations took on added urgency. Strategic objectives now over-ride technical difficulties in the bilateral FTA negotiations. An accelerating momentum has replaced the leisurely pace of negotiations of the pre-September 11 period.³⁰

- **Overcoming Regional Resistance**

Singapore's bilateral FTA lead had come under criticism from her regional neighbours, notably Malaysia. Malaysian concerns centred on the potential circumvention of the AFTA by Singapore's non-ASEAN FTA partners. Singapore was viewed as the potential backdoor, or 'trojan horse', for preferential entry into AFTA without corresponding market access to Singapore's FTA partners' markets for AFTA members. However, strict rules of origin provisions specific to trade agreements prevent any possibility of circumvention. Malaysia's fears of backdoor entry are therefore unwarranted. Fortunately for Singapore, with Thailand and the Philippines also considering the bilateral FTA route to trade liberalisation, it is clear that those ASEAN members who are committed to and comfortable with further liberalisation should strive ahead and lead the way. Their experiences could then be shared with other ASEAN partners. Despite some reservations among ASEAN members on the wisdom of having an ASEAN-China FTA, the decision to embark on the ASEAN-China FTA is a reflection of the great progress made in muting criticisms on the wisdom of further trade liberalisation. Members previously opposed to the FTA have now given their blessings in quiet acquiescence.³¹

Concerns have also been raised over the coverage and comprehensiveness of Singapore's bilateral trade agreements, in particular, the perceived limited trade liberalisation of agriculture. Singapore is fully aware of such concerns and has consistently insisted on the inclusion of all sectors, including sensitive sectors like agriculture, for coverage within bilateral FTAs to conform to WTO rules. Hence, Singapore's bilateral FTAs have sought a WTO-plus, WTO-consistent result which commits both partners to liberalise beyond their WTO commitments.³²

- **Maintaining Location Competitiveness: Countering the "Hollowing Out" Effect**

Singapore's dual track economic strategy carries with it an inherent latent danger of the "hollowing out" effect. Heavy dependence on foreign MNC capital inflows had created unprecedented prosperity within one generation. Yet, the transnational nature of MNCs creates a mobility dynamic which makes MNC capital extremely mobile. Newly-emerging markets like China, with strong domestic consumption potential and competitive cost structures will naturally draw MNCs away from Singapore.³³

Second, Singapore's regionalisation drive to develop an external wing to its domestic economy similarly carried a potential "hollowing out" effect. Local companies were encouraged to invest and re-locate their cost-sensitive manufacturing operations in Singapore's neighbourhood, both to reap the cost savings and also, to increase their market share in regional markets. It entailed significant divestment from Singapore into the region. The strategy will make sense if Singapore firms could reap significant returns from regional operations. But this strategy was hard-hit by the Asian Financial Crisis in 1997 which seriously affected Southeast Asia. What was required was not a regionalisation strategy, but a globalisation strategy.³⁴

The FTA strategy therefore, is a counter to the growing displacement policies of MNCs to re-locate their cost-sensitive manufacturing facilities to low-cost countries. Yet, the efficacy of the strategy is industry-specific. Industries which require huge capital and infrastructure outlays like oil refining and petrochemicals are relatively immobile. Thus, they will benefit from FTAs through greater market access opportunities. The electronic manufacturing industry is however, highly mobile. In the case of electronics, the complete implementation of the WTO's Information Technology Agreement (ITA) in 2001 has reduced tariffs on most Information Technology (IT) products to zero. As the signatory countries are major economies like the Quads and comprise more than 90 percent of the global IT trade, Singapore's bilateral FTA initiatives will have little impact on tariffs, although the FTA benefits will largely accrue in telecommunication services. With no advantage to be gained from the FTA initiatives, low-cost electronics manufacturers will continue to divest and re-locate their manufacturing operations to cost-competitive locations overseas. New high-end, high-cost industries like pharmaceuticals and biotechnology however, will be attracted to invest in Singapore given the relatively lower cost structures compared to similar investments in their home countries. The FTAs, with their preferential tariff treatment, will be additional incentives for such MNCs to re-locate their regional operations to Singapore. In assessing the overall cost-benefit impact of Singapore's FTA strategy on MNCs, the strategy is unable to stamp the hollowing out of Singapore's electronics manufacturing capability. Singapore's competitive edge in electronics will increasingly centre on specialty high-end electronics like screen displays and wafer fabrication. But in retaining established industries like oil refining and petrochemicals and attracting new high-end industries like pharmaceuticals and biotechnology with their high barriers to entry, the FTA initiatives will help increase Singapore's attractiveness as an investment location for such industries.³⁵

Likewise, another big gainer in Singapore's bilateral FTAs will be its fledgling services sector. As part of its economic diversification efforts, Singapore has tried to develop a services sector to complement its manufacturing sector. Bilateral FTAs will help to secure market access to the burgeoning services markets of the developed countries.³⁶

On the domestic front, Singapore's FTAs will help fulfil the long-term strategy of developing local MNCs. The attraction of new industry clusters like pharmaceuticals and biotechnology will seed and help spur the growth of new Singapore companies in these fields. The FTAs will also create new markets and trade opportunities for Singapore companies, particularly those which are poised and willing to internationalise their operations overseas.³⁷

Assessing the FTA Strategy

From Singapore's viewpoint, the failure of the WTO Ministerial Conference in Seattle marked a double setback. Failure to further liberalise world trade closed off one potential avenue to jumpstart the ASEAN economies after the devastating Asian Financial Crisis of 1997. The rise of China diverted FDI flows away from ASEAN, further hampering economic recovery efforts. The Asian Financial Crisis brought home the negative effects of globalisation and trade liberalisation, causing countries like Malaysia to doubt the wisdom of opening their markets to further foreign competition. The double blows further diminished the attractiveness of Southeast Asia as an investment destination. These were the prevailing conditions when Singapore embarked on its FTA Strategy. After two years of operation, the strategy had fulfilled its premise of lending a positive demonstrative effect to the use of FTAs as a means to accelerate the trade liberalisation momentum at the multilateral level. More importantly, the strategy has proven itself to be an effective economic insurance policy for Singapore. Market access security has been attained by the FTAs with Japan and the US, Singapore's major trading partners.³⁸

It is fortuitous that Singapore's FTA strategy coincided with the Quads' strategic self-interests. The changed geostrategic environment in the aftermath of the September 11 events further reinforced the strategic argument used in securing FTA negotiations with Singapore's major trading partners. On the multilateral front, the new geostrategic environment also made possible the launch of a new round of global trade negotiations with a pro-development agenda. As a trade instrument that began as a fall-back plan in a worst-case scenario, the FTA Strategy had succeeded beyond expectations. In a period of turmoil and uncertainty, Singapore's quest for economic security has been well-served by the FTA Strategy. What

started out as a strategy of "half a loaf is better than none" has culminated in a situation of Singapore "having its cake and eating it too".

Endnotes

1 Christopher M. Dent, "Singapore's Foreign Economic Policy: The Pursuit of Economic Security", *Contemporary Southeast Asia*, 23, 1 (April 2001), pp. 4-5; Lee Chyungly, "On Economic Security", in *An Asia-Pacific Security Crisis? New Challenges to Regional Stability*, ed. Guy Wilson-Roberts (Wellington: Centre for Strategic Studies, 1999), pp. 69-74; Ian Taylor, *Multilateralism, Neo-liberalism and Security in Asia: The Role of the Asia Pacific Economic Co-operation Forum*, IDSS Working Paper No. 19 (Singapore: Institute of Defence and Strategic Studies, 2001), pp. 4-6.

2 Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Random House, 1987).

3 Ramesh Thakur, "From National to Human Security", in *Asia-Pacific Security: The Economics-Politics Nexus*, ed. Stuart Harris and Andrew Mack (St. Leonards, NSW: Allen & Unwin Australia Pty Ltd., 1997), p. 52 citing Barry Buzan.

4 Michael Elliott, "A Not-So-New World Order", *Time*, 2 April 2001; David Harrison, *The Sociology of Modernization and Development* (London: Unwin Hyman, 1988), pp. 84-97.

5 World Trade Organisation (WTO), *International Trade Statistics 2001* (Geneva: WTO, 2001), Tables I.5 and I.7.

6 W.G. Huff, *The Economic Growth of Singapore: Trade and Development in the Twentieth Century* (Cambridge: Cambridge University Press, 1994), pp. 24, 43.

7 *Ibid.*, p. 3.

8 Based on Year 2000 trade figures. See <http://www.mti.gov.sg>.

9 Tilak Doshi & Peter Coclanis, "The economic architect: Goh Keng Swee", in *Lee's Lieutenants: Singapore's Old Guard*, eds. Lam Peng Er & Kevin Y. L. Tan (St Leonards, NSW: Allen & Unwin, 1999), pp. 31-33; Michael Leifer, *Singapore's Foreign Policy: Coping with Vulnerability* (London: Routledge, 2000), p. 80; Lee Kuan Yew, *From Third World to First: The Singapore Story: 1965-2000* (Singapore: Singapore Press Holdings and Times Editions, 2000), pp. 75-77.

10 Tim Huxley, *Defending the Lion City: The Armed Forces of Singapore* (St. Leonards, NSW: Allen & Unwin, 2000), p. 24.

11 Leifer, *Singapore's Foreign Policy*, p. 161.

12 Chin Kin Wah, "Singapore: Towards Developed Country Status The Security Dimension", in *Singapore: Towards A Developed Status*, ed. Linda Low (Singapore: Oxford University Press, 1999), pp. 297-298.

13 The GATT was founded in 1947 with the aim of liberalising and dismantling barriers to global trade.

14 The World Trade Organisation, *Trading into the Future* (Geneva: WTO Publications, 2001), p. 7.

15 8 trade rounds have been negotiated so far. The 9th round, agreed to at the 4th WTO Ministerial Conference in Doha, November 2001, will commence in 2002.

16 The GATT initially focussed on tariff liberalisation. With growing complexity in the global economy, it became necessary to focus on agriculture and other new, non-tariff areas like services, intellectual property rights, trade-related investment measures and non-tariff trade measures like anti-dumping, countervailing duties and subsidies. These issues were taken up in the Uruguay Round.

17 Taylor, *Multilateralism*, pp. 12-16.

18 The Quads are the US, the EC, Japan and Canada. These countries are responsible for a significant portion of the world's trade flows. In 2000, 54 percent of world merchandise exports went to these countries. They therefore exert tremendous influence over the establishment of rules for the multilateral trading system. See Martin Wolf, "Broken promises to the poor: If the west really wants to tackle global poverty and hunger, it should start by practising what it preaches on trade", *Financial Times*, 21 Nov 2001.

19 In 1994, APEC's share of world trade was 23.7 percent, more than the EC's share of 22.8 percent. See C. Fred Bergsten, "Open Regionalism", *The World Economy*, 20, 5 (August 1997), p. 546; APEC's 21 member economies had a combined Gross Domestic Product of over US\$18 trillion in 1999 and 43.85 percent of global trade. The development of a trade preferential agreement within APEC would cut off the EC from a sizable share of global trade. See APEC website, www.apecsec.org; Yang Razali Kassim, "Asia Pacific's changing economic landscape", *The Business Times*, 6 June 2001; David Uren, "Building blocks, not stumbling blocks", *asia-inc*, April 2001; Barry Desker, *Asian Developing Countries and the Next Round of WTO Negotiations*, IDSS Working Paper No. 18 (Singapore: Institute of Defence and Strategic Studies, 2001), p. 19.

20 "Asean tariff cuts in Jan mark key free trade goal", *The Business Times*, 31 December 2001; "Tariff cuts mark milestone for Asean today", *The Straits Times*, 1 January 2002.

21 Desker, *Asian Developing Countries*, p. 7.

22 Chuang Peck Ming, "Free trade pacts: virtuous 'promiscuity'?", *The Business Times*, 17 January 2002.

23 In WTO terminology, any form of preferential trading arrangement can be classified as a RTA, including bilateral free trade agreements. See World Trade Organization, Committee on Regional Trade Agreements, WT/REG/W/41, "Mapping of Regional Trade Agreements", 11 October 2000.

24 Jagdish Bhagwati, *The Feuds over Free Trade* (Singapore: Institute of Southeast Asian Studies, 1997), pp. 17-24; Dent, "Singapore's Foreign Economic Policy", pp. 12, 18; Bergsten, "Open Regionalism", pp. 546-547.

25 Uren, "Building blocks", *asia-inc*, April 2001.

26 Bergsten, "Open Regionalism", pp. 547-549.

27 Catherine Ong, "US and S'pore aiming for 'model' FTA", *The Business Times*, 11 June 2001; "Japan, S'pore FTA sooner than expected", *The Straits Times*, 15 March 2001; Yang Razali Kassim, "Singapore's team of top FTA negotiators is in full swing", *The Business Times*, 13 June 2001; Yang Razali Kassim, "Japan warms up to free trade pact with S'pore", *The Business Times*, 20 June 2001; Brian Fallow, "Nod given to free trade agreements", *The New Zealand Herald*, 13 April 2000, <http://www.nzherald.co.nz>.

28 In 2001, actual FDI flows into China amounted to a record-breaking US\$46.85 billion constituting 70 percent of all new investments into East Asia while ASEAN attracted only US\$8 billion. In comparison, Shanghai alone attracted the same amount of FDI as ASEAN over the same period. See *Washington Trade Daily*, 14 and 15 January 2002; William Choong, "China's WTO entry a 'wake-up call'", *The Straits Times*, 9 January 2002; Idem, "Shanghai is the place to be, Chinese trade envoy tells firms", *The Straits Times*, 10 January 2002; Dawn Teo, "ASEAN nations view China's WTO entry with mixed feelings", 30 November 2001, www.channelnewsasia.com.sg.

29 See *Washington Trade Daily*, 14 and 15 January 2002; "Japan-Asean trade plan 'in the works'", *The Straits Times*, 1 January 2002; Kwan Weng Kin, "Koizumi envisions Japan-Asean trade zone", *The Straits Times*, 9 January 2002; Kwan Weng Kin, "PM Goh, Koizumi call for Japan-Asean pact", *The Straits Times*, 10 January 2002; "Koizumi's mission", *The Straits Times*, 12 January 2002; Yang Razali Kassim, "Japan-Asean ties yet to take final shape", *The Business Times*, 16 January 2002; Edward Gresser, "China in the WTO: Three predictions and one reminder", *The Straits Times*, 10 November 2001; Mary Kwang, "Why China speeded up plans for FTA with ASEAN", *The Straits Times*, 13 November 2001; "China's long march to the market", *asia-inc*, November 2001; James Kynge, "China enters WTO dawn with mixed expectations", *Financial Times*, 11 December 2001; William Choong, "China can fuel demand for Asian exports", *The Straits Times*, 18 December 2001; "Chinese FTA seen as double-edged sword for Asean", *Business Times (Malaysia)*, 7 January 2002; Irvin Lim Fang Jau, "Dragon Dance: China's Global Charm Offensive as Grand Strategies of Dalliance and Distraction", *Pointer*, 27, 3 (July-September 2001), pp. 42-43; Leifer, *Singapore's Foreign Policy*, pp. 98-130.

30 Robert B. Zoellick, "Countering Terror with Trade", *The Washington Post*, 20 September 2001; "US Expands GSP Benefits for Indonesia", *Washington Trade Daily*, 20 September 2001; "US Aids Exporters to

Indonesia", *Washington Trade Daily*, 24 September 2001; "US Lifts Sanctions on India, Pakistan", *Washington Trade Daily*, 24 September 2001; "Senate Approves Jordan FTA", *Washington Trade Daily*, 25 September 2001; David Hale, "Trade can fight terrorism", *Financial Times*, 17 October 2001; Bob Davis, "U.S., Europe See Trade as Weapon", *The Asian Wall Street Journal*, 30 October 2001; Helene Cooper, "The Textile Pinch In Pakistan Shows Bush's Big Dilemma", *The Asian Wall Street Journal*, 30 October 2001; "High stakes at Doha", *The Economist*, 3 November 2001; Narendra Aggarwal, "WTO may fail to agree on new global trade talks", *The Straits Times*, 12 November 2001; Lael Brainard, "Textiles and Terrorism", *The New York Times*, 27 December 2001; Desker, *Asian Developing Countries*, pp. 18-19.

31 Hugh Chow, "No Afta 'back door' in FTA strategy", *The Straits Times*, 28 February 2001; Sree Kumar, "Why FTAs necessary", *Today*, 8 March 2001; Yang Razali Kassim, "Asia Pacific's changing economic landscape", *The Business Times*, 6 June 2001; "MITI to study impact of Singapore plan to seek FTAs", *Business Times (Malaysia)*, 15 June 2001; Tan Sri Ramon Navaratnam, "A vital role for Singapore in Asean trade relations", *New Straits Times*, 16 June 2001; "FTA backdoor into

ASEAN", *Business Times (Malaysia)*, 19 June 2001; Asad Latif, "FTAs 'complement Asean's integration'", *The Straits Times*, 13 July 2001; "Singapore can sign deals that do not affect Afta", *New Straits Times*, 8 Jan 2002; Anthony Rowley, "Koizumi: No FTAs with other Asean members for now", *The Business Times*, 9 January 2002; "Tokyo cool to Bangkok's idea of bilateral free trade agreement", *The Straits Times*, 13 January 2002.

32 "China daily slams Japan-S'pore pact", *The Straits Times*, 17 January 2002; Larry Jagan, "Singapore's free trade mission", BBC News Online, 13 January 2002, <http://news.bbc.co.uk>.

33 Ho Kwon Ping, "MNCs and Singapore's Development and Security", *Pointer*, 19, 4 (October-December 1993), pp. 48, 50-51; According to Xinhua news agency, FDI in China is expected to reach an all-time high in 2002. See *Washington Trade Daily*, 4 December 2001; Katherine Tay, "Japanese chemical giants may move investments from S'pore to China", 8 January 2002, www.channelnewsasia.com.sg.

34 Ho, "MNCs and Singapore's Development", pp. 53-54; Chin, "Singapore: Towards Developed Country Status", pp. 302-306; Tan Khee Giap & Lee Wee Keong, "Beyond Regionalization, Basis for Sustainable Growth and Potential Sources of Expansion", in *Singapore: Towards A Developed Status*, ed. Linda Low (Singapore: Oxford University Press, 1999), p. 108.

35 Hau Boon Lai, "Japanese firms eye S'pore market", *The Straits Times*, 17 January 2002.

36 Denesh Divyanathan, "FTA opens door to Japan's huge services market", *The Straits Times*, 14 January 2002; Chuang Peck Ming, "Japan pact gives services firms here a leg up", *The Business Times*, 14 January 2002; "Pact will open up services in both countries", *The Business Times*, 14 January 2002.

37 Chuang Peck Ming, "S'pore exporters to enjoy big tariff savings", *The Business Times*, 14 January 2002; William Choong, "Big savings for businesses here", *The Straits Times*, 14 January 2002; Abdillah Noh, "FTAs can enhance reach of Singapore companies", 25 January 2002, www.channelnewsasia.com.sg.

38 Ignatius Low, "S'pore, Japan to sign FTA", *The Straits Times*, 4 January 2002; Idem, "Japan, S'pore sign landmark trade deal", *The Straits Times*, 14 January 2002; Ana I. Eiras and Denise H. Froning, "U.S. Trade Agreements with Chile and Singapore: Steps to Global Free Trade Agreement", The Heritage Foundation Executive Memorandum No. 715, 30 January 2001, <http://www.heritage.org>; Rachel Ong, "US-S'pore FTA could lift GDP by 1.4 points: UOBKayHian", *The Business Times*, 13 July 2001; Ramkishan S. Rajan, "The Shanghai Summit: Hope in Global Despair", undated, www.ips.org.sg.

Bibliography

Primary Sources

Manuscript Official Sources

World Trade Organization

Geneva, Switzerland

WT/REG/W/41 Committee on Regional Trade Agreements

Secondary Sources

Books

Jagdish Bhagwati, *The Feuds over Free Trade*. Singapore: Institute of Southeast Asian Studies, 1997.

Desker, B. *Asian Developing Countries and the Next Round of WTO Negotiations*, IDSS Working Paper No. 18. Singapore: Institute of Defence and Strategic Studies, 2001.

Harrison, D. *The Sociology of Modernization and Development*. London: Unwin Hyman, 1988.

Huff, W.G. *The Economic Growth of Singapore: Trade and Development in the Twentieth Century*. Cambridge: Cambridge University Press, 1994.

Huxley, T. *Defending the Lion City: The Armed Forces of Singapore*. St. Leonards, NSW: Allen & Unwin, 2000.

Kennedy, P. *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. New York: Random House, 1987.

Lee Kuan Yew, *From Third World to First: The Singapore Story: 1965-2000*. Singapore: Singapore Press Holdings and Times Editions, 2000.

Leifer, M. *Singapore's Foreign Policy: Coping with Vulnerability*. London: Routledge, 2000.

Taylor, I. *Multilateralism, Neo-liberalism and Security in Asia: The Role of the Asia Pacific Economic Co-operation Forum*, IDSS Working Paper No. 19. Singapore: Institute of Defence and Strategic Studies, 2001.

World Trade Organisation, *International Trade Statistics 2001*. Geneva: WTO, 2001.

_____, *Trading into the Future*. Geneva: WTO Publications, 2001.

Articles

Bergsten, C. F. "Open Regionalism", *The World Economy*, 20, 5 (August 1997), pp. 545-565.

Chin Kin Wah, "Singapore: Towards Developed Country Status The Security Dimension". In *Singapore: Towards A Developed Status*, pp. 290-311. Edited by Linda Low. Singapore: Oxford University Press, 1999.

Dent, C. M. "Singapore's Foreign Economic Policy: The Pursuit of Economic Security", *Contemporary Southeast Asia*, 23, 1 (April 2001), pp. 1-23.

Tilak Doshi & P. Coclanis. "The economic architect: Goh Keng Swee". In *Lee's Lieutenants: Singapore's Old Guard*, pp. 24-44. Edited by Lam Peng Er & Kevin Y. L. Tan. St Leonards, NSW: Allen & Unwin, 1999.

Ho Kwon Ping, "MNCs and Singapore's Development and Security", *Pointer*, 19, 4 (October-December 1993), pp.47-54.

Lee Chyungly, "On Economic Security". In *An Asia-Pacific Security Crisis? New Challenges to Regional Stability*, pp. 67-83. Edited by Guy Wilson-Roberts. Wellington: Centre for Strategic Studies, 1999.

Irvin Lim Fang Jau, "Dragon Dance: China's Global Charm Offensive as Grand Strategies of Dalliance and Distraction", *Pointer*, 27, 3 (July-September 2001), pp. 25-55.

Tan Khee Giap & Lee Wee Keong, "Beyond Regionalization, Basis for Sustainable Growth and Potential Sources of Expansion". In *Singapore: Towards A Developed Status*, pp. 87-121. Edited by Linda Low. Singapore: Oxford University Press, 1999.

Ramesh Thakur, "From National to Human Security". In *Asia-Pacific Security: The Economics-Politics Nexus*, pp. 52-80. Edited by Stuart Harris and Andrew Mack. St. Leonards, NSW: Allen & Unwin Australia Pty Ltd., 1997.

Newspapers, Newsmagazines & Newswire Services

asia-inc

The Asian Wall Street Journal

The Business Times

Business Times (Malaysia)

The Economist

Financial Times

New Straits Times

The New York Times

The Straits Times

Time

Today

The Washington Post

Washington Trade Daily

World Wide Web

APEC, www.apecsec.org.

BBC News Online, <http://news.bbc.co.uk>.

Channel News Asia, www.channelnewsasia.com.sg.

Eiras, Ana I. and Froning, Denise H. "U.S. Trade Agreements with Chile and Singapore: Steps to Global Free Trade Agreement", The Heritage Foundation Executive Memorandum No. 715, 30 January 2001, <http://www.heritage.org>.

Ministry of Trade and Industry, <http://www.mti.gov.sg>.

The New Zealand Herald, <http://www.nzherald.co.nz>.

Ramkishan S. Rajan, "The Shanghai Summit: Hope in Global Despair", undated, accessed 19 January 2002 at www.ips.org.sg.



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Synopses of Commendation Award Essays

- **Consequences of Naval Arms Modernisation on the Legal Regime at Sea: Southeast Asia Regional Security in Perspective**

by LTC John Chan, RSN

This essay discusses the relationship between international law and state security interests. The impact of the 1982 United Nations Convention of the Law of the Sea on naval power, maritime territoriality and regional order is shown to be of considerable significance. It concludes that a permanent forum and regional court is needed to discuss and resolve maritime disputes.

- **Cyber-Terrorism: An Emerging Security Threat of the New Millennium**

by CPT Ow Kim Meng, HQ RSAF

The essay examines the vulnerabilities of key infrastructure to cyber-terrorism and the necessary security measures to combat this threat. However, cyber-terrorism can also be a force multiplier when deployed in conjunction with other means of warfare and the essay examines the weapons and tactics involved in waging this type of war.

- **"Internationalising" the South China Sea Maritime Dispute: The Regional Code of Conduct**

by CPT Sung Pong, Singapore Armour Regiment (SAR)

The South China Sea maritime dispute, particularly around the Spratlys, has been a bone of contention amongst ASEAN states and China. This essay examines the efforts of ASEAN to manage the dispute through negotiation, norm-setting and "internationalisation".

- **Learning @ Work**

by CPT Choy Dawen, ASB, RSAF

In modern warfare, militaries need to adapt quickly to changes. The author illustrates this point with reference to innovativeness shown by the IDF in the 1973 Yom Kippur War. The essay examines tacit and explicit knowledge, the impact of IT on learning and training and the guiding principles in making the SAF a learning organisation.

- **PD and the ARF: The Problem or the Solution?**

by MAJ Lim Choon Huat, FTC, RSAF

This essay reviews the concept of Preventive Diplomacy (PD) and how the ASEAN Regional Forum (ARF) could use it to facilitate security and stability processes in the Asia Pacific region. Key issues tackled include coming to a common agreed definition of PD and whether this is compatible with ASEAN's diplomatic style.

- **Revolution in Military Affairs: Observations and Imperatives for the SAF**

by CPT Ho Yung Peng, Fighter Squadron, RSAF

The Revolution in Military Affairs (RMA) is discussed in terms of technology, doctrine and socio-politics. This essay argues that the SAF must look beyond mere technological superiority. To keep ahead as others catch up in terms of platforms, revolutionary change must be extended to doctrine and organisation as well as to Singapore's society.

- **Role of Unmanned Combat Aerial Vehicles (UCAVs) in Singapore**

by CPT Yew Heng Siong, PCII, RSAF

This essay highlights historical examples of how Unmanned Aerial Vehicles (UAVs) have been used in war. It goes on to explore the merits and drawbacks of employing UCAVs, particularly in Singapore's context, as well as suggesting parameters for their employment.

- **Social Capital: The Bridge in Knowledge Management**

MAJ Joseph Neo Hock Chye, TRACOM, RSN

While information technology is an enabler for knowledge management, the essay argues that investment in IT must be balanced with the building of social capital, focussing on developing a sharing culture, investment in education, and building social networks.

- **The Professional Soldier**

CPT Lim Ann Nee, HQ RSAF

The author opines that the professional soldier is one who is intrinsically motivated to serve, putting the nation before oneself, rather than one who is motivated by extrinsic rewards such as pay and promotions. The essay emphasises the need to inculcate the traditional core values in our personnel.

- **The Threat of Asymmetric Warfare to Singapore**

MAJ (NS) (DR) Chia Eng Seng Aaron

This essay explores the range of asymmetric strategies that may be employed to threaten Singapore. It explores the strategic considerations that need to be addressed as well as the possibilities of using Total Defence and technology to counter this threat.

Book Review:

Raising Churchill's Army: The British Army and the War against Germany 1919-1945 (Oxford: Oxford University Press, 2000) by David French

Reviewed by LTA (NS) Toh Boon Ho

In the HBO mini-series, *Band of Brothers*, British tank commanders advancing into the Dutch town of Nuenen were depicted as foolhardy soldiers who strictly followed orders not to destroy property unnecessarily even though they knew that German armour were waiting in ambush among the town's buildings. The Germans swiftly dispatched the British armour. The surviving British tanks and supporting American paratroopers barely extricated themselves from the debacle under the covering fire of their own artillery.

structure that emphasized obedience to orders, rather than exercising initiative. However, this "system of inflexible, autocratic command and control" co-existed uneasily with the contradictory belief that giving subordinates wider latitude to use their own initiative was a positive handicap to success.¹ Therefore, British army doctrinal manuals stated general principles but did not provide concrete examples to show how these principles should be put into practice. It was a deliberate omission designed to enable each individual commander to decide how to apply the principles in the light of the particular circumstances confronting him. It was a widely held belief that when it came to a crisis, the British army would always be able to improvise a successful solution. Indeed, senior British officers credited themselves with a rare ability to do so. However, the quintessential Napoleonic element proved harder to find in reality and the British faith in their uniquely British 'character' to deliver the desired results on the battlefield was badly misplaced.

The *laissez-faire* attitude held by senior British commanders had an adverse effect on training. Since each unit commander was free to interpret doctrine as he sees fit, an idiosyncratic training approach developed. Thus, the quality of combat units was uneven and overly dependant on the training regime imposed by the individual unit commanders. Similar weaknesses extended to commander training regimes. The peacetime training of battalion and brigade commanders proved inadequate for the rigours of operational commands in war. They were unable to step-up to the next command if dictated by circumstances. Even among the senior commanders, their training at the prestigious Staff College taught them to be strategists, rather than divisional or corps commanders.²

The poor performance of the British army at the onset of war can be attributed to developments during the inter-war period. After the First World War, the British army reverted to imperial policing. Imperial policing emphasised mobility over firepower. Mobility was a pre-requisite in view of the vast campaigning distances required and the corresponding need to minimise logistical demands. Heavy firepower was not required because the indigenous opposition were poorly equipped with modern weapons. Internal security operations also did not favour heavy firepower weapons that may cause excessive casualties among disaffected colonial subjects. Colonial authorities favoured minimal force and controlled violence since it limited the amount of political capital available to indigenous nationalist movements to whip up anti-colonial sentiment. The financial stringency imposed on the armed services by the Treasury during the inter-war period also meant that spending focused on the demands at hand, i.e. the tools of imperial policing rather than heavy firepower weapons. This parsimony similarly curtailed the large formation exercises necessary to foster inter-arms operability within the army and between the services. The dismal showing by British and Commonwealth land forces against the German and Japanese armies at the onset of World War Two, therefore, was a manifestation of the pains inherent in an organisation that was transiting from imperial policing to total war.

At the tactical level in the war against the Axis powers, British combat formations lacked adequate organic fire-support. Heavy firepower weapons were centrally controlled at divisional, Corps and Army level. Lower echelon units had to go through a time-consuming process before fire-support requests were fulfilled. Shortages of communication equipment it was common to find just one radio set per infantry battalion

meant that the artillery was often late and the troops unable to react quickly to the quick tempo of operations which characterised the German and Japanese *modus operandi*. The reality of under-armed combat formations made a mockery of the centrality of firepower in British doctrine.

The transformation of the British army took place under a new set of leaders, chastened by the defeats of the earlier war years, with a different mindset towards command and control. Montgomery, for example, favoured the verbal battle order issued through the radio rather than the more conventional and cumbersome written order.³ This system allowed the commanders to respond more quickly to changes on the battlefield, and to match, if not exceed, the operational tempo of their enemies.

More importantly, it was the emphasis on training, and in Montgomery's case, the iron-clad emphasis on battle drill, which improved British combat effectiveness. French observed that battle drill, which was so derisively derided in the inter-war period, came into favour during the Second World War. Battle drill allowed the systematic imposition of a common doctrine within theatre commands. Cross-theatre interaction were fostered through dissemination of the *Notes from Theatres of War* series of training materials which sought to distil the lessons of actual combat for the training formations in the United Kingdom and India.⁴ While the British army did not possess a common doctrine by the end of the war, the *laissez-faire* attitude to training inherent in the British army allowed commanders like Montgomery and Slim to impose their will upon the training of new fighting formations within their own theatres.⁵

By 1944, increased weapons production also began to make its presence felt in the fighting formations. The arrival of more materiel coincided with the rapidly dwindling pools of manpower available to the British army. As the war wore on and increased in intensity during the drive through Northwest Europe in 1944, the British army became ever more dependent upon firepower to deliver military objectives rather than subject their dwindling numbers of infantrymen to pitched battles. Even then, the casualty figures among the British infantry during the key battles of Northwest Europe rivalled, if not exceeded, the casualty figures sustained during the fiercest fighting on the Western Front during the First World War. Though the British army steadily improved its operational art, British victory in the Second World War laid not with the British army's ability to defeat the German army, but rather, in Britain's membership of the more powerful alliance which delivered ultimate victory.

French's work is an important contribution to our understanding of the British army's successes and failures during the Second World War. He offers a convincing thesis that the contradictions in British doctrine and weaknesses in the command and control system, coupled with the lack of equipment, accounted for the initial lacklustre British combat performance against the German army. The aversion to risk characteristic of the British army in the later stages of the war can be explained by the need to conserve dwindling manpower resources. In light of French's ground-breaking effort, the British army's campaigns in the Far East deserve a fresh appraisal and awaits investigation.

The abovementioned title is available for borrowing at the [SAFTI MI Library](#). The catalog references are:

Raising Churchill's Army: The British Army and the War Against Germany 1919-1945
David French
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Endnotes

1 See author's book review of *Command or Control? Command, Training and Tactics in the British and German Armies, 1888-1918* (London: Frank Cass & Co. Ltd., 1995) in *Pointer*, 25, 1 (January - March 1999), pp. 118-123.

2 Though the British operational art was inferior, German tactical strengths were negated by their "fundamental inability to make sound strategic judgments" in contrast to British strategic astuteness. See Geoffrey P. Megargee, *Inside Hitler's High Command* (Lawrence, Kansas: University Press of Kansas, 2000), pp. 232-233.

3 Slim similarly favoured verbal over written orders. See Slim's autobiography *Defeat into Victory: Battling Japan in Burma and India, 1942-1945* (New York: Cooper Square Press, 2000) and Ronald Lewin's biography *Slim: The Standardbearer* (London: Leo Cooper, 1976).

4 While French's analysis focused on the European and North African campaigns, similar observations could be made of the Malayan and Burma campaigns.

5 For an incisive account of British military training, see Timothy Harrison-Place, *Military Training in the British Army, 1940-1944: From Dunkirk to D-Day* (Portland, Oregon: Frank Cass, 2000), *passim*.

Selected Books and Reports:

Lawrence Freedman



Professor Lawrence Freedman is Professor of War Studies and Head of the School of Social Science and Public Policy, King's College London, UK. Prior to this, he was Head of Policy Studies at the Royal Institute of International Affairs, UK. He has also held research positions at Oxford and the International Institute for Strategic Studies. A leading academic on defence and foreign policy matters, he has written extensively on these topics. We feature a selection of his works here.

Britain and Nuclear Weapons was written by Freedman during the early 80s. In it, he analysed Britain's nuclear policy from World War II until the early 1980s. Britain's nuclear policy has been influenced and torn between her own interests, those of the European community and her ally America. Britain was often caught in an awkward position because of the powerful pulls of these diverse influences. This book, which meticulously traced the causes and consequences of Britain's predicament, gives a good insight into the evolution of Britain's nuclear policy.

Another book on British affairs, *The Politics of British Defence 1979-98* is a collection of essays exploring British defence policy changes over a period of 20 years. It starts from the Conservative election victory in 1979 till the publication of the Labour government's strategic defence review in 1998. The book is neatly divided and compartmentalised to cover different aspects of British defence policy. Part 1 sets the tone by assessing the defence policy of two Conservative Prime Ministers - Margaret Thatcher and John Major - and at the same time it provides an overview of the main issues covered in the rest of the book. Parts 2 to 5 deal with topics such as Grand Strategy, Defence Reviews, Nuclear Strategy and Industrial Issues. The essays provide a well-informed analysis of the major issues influencing British policy.

Those interested in war studies may be familiar with *War*, a book edited by Freedman. In it, he compiled 97 writings, drawn from numerous sources. The book is an ambitious attempt to address the myriad aspects of war. It has succeeded in portraying the multi-faceted and multi-dimensional character of war by drawing on the accounts of people from all walks of life: from eminent historians, political scientists, philosophers, sociologists, economists and the practitioners of war - soldiers. It also covers a wide range of conflicts, from the Battle of Waterloo, the Vietnam War and the Cold War. The book is neatly classified and sectionalised by themes, so that each section is a complete read by itself. The first section of the book provides a vivid first-person narrative of the experiences of warfare with contributions ranging from senior officers to the rank and file. Other sections cover themes such as the causes of war, the ethics of war, strategy etc.

Freedman has also made his mark on the debates about the Revolution in Military Affairs (RMA). He wrote an Adelphi Paper titled *The Revolution in Strategic Affairs* published in 1998. This paper argues that while the advancement in technology heralds a new era of military capabilities, the issues that drive conflict will persist. Furthermore, with the end of the Cold War, conflicts between big powers are highly unlikely to occur.

Conflicts are more likely to be limited in nature involving weak states, militia groups, drug cartels and terrorists. Freedman argues that precision weaponry and information technology may be less suited to tackle these limited conflicts. Given the substantial amount of interest in RMA, this paper is highly recommended for those interested in Freedman's perspective on the issue.

All the books and research papers featured above are available at the SAFTI Military Institute Library.

Personality Profile:

Air Chief Marshal Lord Hugh Dowding



In 1940, the Battle of Britain was fought and won by Great Britain. This was the first major air battle of World War Two and the British victory was attributable to the Fighter Command and its Commander-in-Chief, Air Chief Marshal Hugh Dowding. Dowding's remarkable career was marked by controversy and political intrigue. He was dismissed from his post in the same year despite his role in winning the crucial Battle of Britain.

Hugh Dowding was born into a middle class Victorian family on 24 April 1882. He was educated at Winchester and entered the Royal Military Academy, Woolwich in 1899 at age 17. He was commissioned as a gunner with the rank of Second Lieutenant a year later, and served tours in several countries including Hong Kong, Ceylon, Gibraltar and India. Dowding returned to England in 1913 to attend the Camberly Staff Course. However, he became disillusioned with the Army because of its slow promotion prospects and its conventional nature of training. The Royal Flying Club (RFC) had just been formed a year earlier, in April 1912. It needed men who were individualists and Dowding seized the opportunity. He received his wings as a full-fledged pilot in the RFC in the spring of 1914.

When World War One broke out in 1914, Dowding pressed for and was posted to France. In France, he gained experience and competency in flying and in the technical aspects of aviation. During the war years, he rose quickly through the ranks. In 1915, he was given his first command - the No.16 squadron. After France, he went back to England and was responsible for the training of the RFC. He was acknowledged to be an authority on training and the Royal Air Force, being an expanding new Service, offered many opportunities. He was promoted to Brigadier-General in 1918, aged 35, less than four years after he obtained his flying wings.

The period immediately after the war was a time of turmoil for the new Air Service, which had to fight to survive as an independent service because of the lack of public confidence in its future. On the personal front, he suffered a tragedy when his wife of only two years died. He withdrew from activities that required socialising and devoted all his time and effort into his work.

In the post war years, he assumed several appointments at the Air Ministry in London, including the Director of Training, a post for which he was well suited in view of his earlier experience. In 1930, he was appointed as an Air Member for Supply and Research to the Air Council and used this opportunity to invite two private companies to tender and produce better airplanes. The results of this were the famous *Spitfire* and the *Hurricane* fighter planes. His most important contribution, however, may be his development of what is

now known as radar, but which was then known as radio direction finding (RDF). He was one of the earliest enthusiasts who foresaw its potential in air defence.

In 1933, he was promoted to Air Marshal and in 1936, became the first Commander-in-Chief of Fighter Command. He built it up from scratch and was extraordinarily far-sighted in his approach. He incorporated radar into the overall defence system, and created a complex network of communications and control by linking the radar stations and various defence organisations to his headquarters. Fighter Command was then divided into various groups, each with its own commander and headquarters. He was promoted to Air Chief Marshal in 1937.

When the Second World War broke out in 1939, Dowding had to wage another battle, but this one was with the political top brass. He was totally committed to home defence and did not agree with Prime Minister Winston Churchill's request for more *Hurricanes* to be sent to France. Churchill was under political pressure from France for reinforcements but Dowding knew that if the fighters should be up against the German fighters in France, this would cause a severe depletion to the Home Air Defence System. Had he not won the point, Fighter Command could have been destroyed and the Battle of Britain lost.

The Battle of Britain was fought in the summer of 1940 when German small-scale raids expanded into an offensive. The German air forces ranged against the Fighter Command were formidable. The *Luftwaffe* had 1,200 long-range bombers, 280 dive bombers, 760 single-engined and 220 twin-engined fighters facing Britain whilst Fighter Command could put up only 42 squadrons of *Spitfires* and *Hurricanes*, eight twin-engined fighters and two single-engined squadrons. At the beginning, the Germans had the initiative but as the battle continued, German losses mounted. By the onset of winter, Goering had called off major day attacks. The threat of invasion had been averted. For the first time, the Germans had been thwarted in their plans. The *Luftwaffe* had been defeated by a numerically inferior force.

However, the moment of glory was not Dowding's to savour. Political manoeuvrings had already been going on regarding his career. He had been bypassed for promotion to the Chief of Air Staff in 1937, although he had been given notice of the promotion earlier. He was then told he had to retire, in order to maintain an adequate flow of promotions in the Service, but the date was repeatedly deferred because of the immediate threat facing the country. In the words of Francis Wilkinson, a one-time subordinate of Dowding: 'It was fantastic that a Commander-in-Chief with all the burdens of the world on his shoulders and fighting one of the major battles of the world, should not know if he was going to be kept on and have to haggle about whether he was to relinquish his Command or to retire altogether from the Service.'

In a stunning blow to Dowding, he was sacked as the C-in-C, Fighter Command, in Nov 1940, shortly after the Battle of Britain was won. There had been a clash between his two Group Commanders, Air Vice Marshal Keith Park, Commander of Group 11, and Air Vice Marshal Leigh-Mallory, Commander of Group 12, the two principal Groups fighting the battle, over the issue of fighting tactics. Dowding, being closely allied with Park, was caught in the midst of this controversy. Leigh Mallory apparently had the support of the Air Ministry, which called a meeting to discuss Dowding's handling of the battle. Shortly after the meeting, Dowding was told abruptly to relinquish his command, and Park was to follow suit soon after.

After Dowding's removal as Commander-in-Chief from the Fighter Command, he was posted to the United States. When he returned to Britain, he headed a study on economics of RAF manpower. He finally retired from the RAF in 1942.

It seems curious that a victorious commander of one of the decisive battles of World War Two was denied an award normally given out to war heroes and at the same time be dismissed from his command. The situation was not helped by Dowding's own reticent and reserved character, which had in fact earned him the nickname of 'stuff' early on in his career. Although the issue of his dismissal had often been criticised by the press, Dowding himself had refused to comment. The recognition owed him was finally given in 1943, three years after the Battle of Britain was fought and won. He was honoured with a baronetcy.

Dowding's achievements may not have received the recognition it ought to then, but the course of history has vindicated him. It is now generally accepted that Dowding had received unjust treatment. In the film *Battle of Britain* inspired by the Battle, which starred Laurence Olivier and which was released in 1969, Dowding's full story was told, and his worth recognised. He died the following year, on 15 February 1970, aged 87.

Bibliography

1 Wright, Robert, *Dowding and the Battle of Britain*, Macdonald & Co. (1972)

2 Flint, Peter, *Dowding and his Headquarters Fighter Comamnd*, Airline Publishing Ltd (1996)