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Editorial

"A good essay must have this permanent quality about it; it must draw its curtain round us, but it must be a curtain that shuts us in not out."

Virginia Woolf in *The Modern Essay*

This issue is dedicated to bringing you the winning essays of the 13th Annual CDF Essay Competition. Attracting a total of 114 entries, this year's participants showed a keen interest in Army 21, military technology and professionalism, strategy, geopolitics and leadership. A notable highlight this year is the surging interest in Army 21 despite its recent introduction, indicating an officers corps which is probing, thinking and in tune with the latest developments in the SAF.

This year's winning essay, *The Manoeuvrist Approach and Dislocation Warfare for the SAF in the Information Age* by MAJ Seet Pi Shen posits that the manoeuvrist approach is especially appropriate for the SAF because it is able to capitalise on the available opportunities to 'fight above its weight' in the Information Age.

The second prize winner, LTC Tan Kim Seng highlights how the SAF has prepared itself for manoeuvre warfare in his essay, *The Need for a Leadership Culture and Initiative for Manoeuvre Warfare*. Using the German army's experience with auftragstatik, the writer looks at how leadership and initiative can be instilled in the SAF to meet the challenges of manoeuvre warfare.

In *Operations Other Than War: The Golden Hour of the SAF Medical Corps*, CPT (DR) Jeremy Lim Fung Yen, the third prize winner, puts a case for the SAF Medical Corps to review its planning and training to enable it to meet the challenges of operations other than war (OOTW). He argues for enhanced training and responsibilities for the NSman medical officer and medical orderly, a dedicated command structure and specialised training for OOTW.

In the Merit Award category, *Snipers - Fitting into the Big Picture* by MAJ Lam Shiu Tong argues that snipers are effective force multipliers with the capability to inflict psychological fear on the enemy. The writer goes on to make proposals to elevate them from being mere skilled marksmen. MAJ Lee Wei Cheng in *Systemic Operational Framework - Operational Design for the SAF* contends that a sound operational-level doctrine and its effective application are essential for military success.

In *Understanding the Security Environment in Southeast Asia: A Key to Analysing the Arms Build-up in the Region* by CPT Benedict Ang Kheng Leong, attempts to address the regional arms build-up by examining the regional context in which it is occurring and its implications on the region. *AKnowledge-based SAF, the Paradigm of the SAF for the 21st Century and Beyond* by CPT Tay Leng Hua discusses the twin problems of economics and security faced by Singapore in the 21st century, the SAF's responsibility for Singapore's defence and the need to move towards a knowledge-based SAF.

Operation Photo - The British Army, Internal Security and the 1956 Singapore Riots by LTA (NS) Toh Boon Ho, gives an insight into British military planning for internal security operations in Singapore when troops were called in to help the civilian administration restore law and order during the 1956 Communist-instigated riots. In *Charging into the Twilight...What the Horse Cavalry and Smart Bombs Can Teach Us About Military Innovation*, LTA Choy Dawen looks at bureaucratic resistance to innovation and highlights how army doctrine and the organisational structure impacts technological innovation. The author posits that sheer technical merit is insufficient for innovation - attention must also be given to the organisational friction and bureaucratic inertia that accompanies change. Due to space constraints, we are unfortunately unable to print LTC Chee Vui Chung's essay, *Is a Regional Security Alliance in Australia's Interest?*

Our heartiest congratulations to the prize winners!

On a separate note, The SAF Professional Reading Programme (PRP), first released as a *POINTERS* Supplement in March 1998, has had a facelift at its Intranet website:

http://safti.mindef/safti/lib/reading_programme

A timely revamp for those intending to do research for this year's CDF Essay Competition which ends on 31 December 2000.

To further promote the Programme, the selection in the *Book Review and Selected Books and Reports* sections focuses on materials in the PRP.

Until the next issue, happy reading.

CDF Essay Competition 1999

Unit	Breakdown of Entries Received
ARMY	62
NAVY	6
AIR FORCE	36
JOINT	5
MINDEF	5
TOTAL	114

ARMY

Unit	Breakdown of entries received
G3 ARMY	3
HQ COMMAND	1
Ist COMMANDO BATTALION	1
23 SA	4
20 SA	1
21 SA	3
SCHOOL OF SIGNALS	2
6 DA BN	1
HQ 26 SIB	1
30 SCE	1
MATERIAL MANAGEMENT SECTION, HQ SCE	1
SAFPU	2
HQMC	2
BMTC SCH 1	1
BMTC SCH 2	2
HQ INFANTRY (ITC)	1
HQ 10 SIB SIG	7
6 SIR	12
3 SIR	12
1 SIR	1
HQ 9 DIV	1
HQ 2 SIB	1
1 PDF TC	1

MINDEF

Unit	Breakdown of entries received
MSD	1
TRC	3
CENTRAL NATIONAL EDUCATION OFFICE	1

AIR FORCE

Unit	Breakdown of entries received
FSS/TAB	2
ALS/TAB	4
ALS/SBAB	3
ASB,ADSB	2
120 SQN	1
HQ RASF	6
140 SQN/TAB	1
145 SQN//TAB	1
142 SQN/TAB	1
FDS/TAB	1
PC 111/TAB	1
PC 11/TAB	1
HQ TAB	1
165 SQN/ADA	1
APD	1
TASC	1
128 SQN	1
ALD	1
AFAB	1
160 SQN	3
ALS/PLAB	1

NAVY

Unit	Breakdown of entries received
Medical operations, Doctrine and training office	1
188 SQN	1
HQ 1ST FLOT-RSN	1
RSS PUNGGOL	1
RSS SEA HAWK	1
191 SQN	1

JOINT

Unit	Breakdown of entries received
OCS	4
JTB-JOD	1

The Manoeuvrist Approach and Dislocation Warfare for the SAF in the Information Age

by MAJ Seet Pi Shen

... victory goes to the party that crushes the enemy's will and destroys his beliefs.

Introduction to Japanese Principles of War, 19691

When Japan swept through Southeast Asia in 1942, its forces consistently defeated well-equipped and numerically superior ones. A major success factor was the use of new warfighting techniques to maximise the use of new technology and new force structures to achieve optimal battlefield effect and, as the opening quote alludes, crush the opponent's will to fight by destroying his beliefs.

Much has changed since then. It is widely believed that the world is undergoing a 'revolutionary' period of change as it transits from the Industrial Age, with the focus on machines, to the Information Age, where the focus is on knowledge.² Like the transition from the Agrarian Age to the Industrial Age, this will have a significant effect on the way future war is conducted.

To prepare for the change, many modern armed forces, including the SAF, have started adopting 'manoeuvrist approaches' to warfighting. This may or may not be effective in coping with the challenges of future warfare. To test this, the essay will firstly examine the main differences between warfare in the Industrial Age and Information Age. It will then explore how manoeuvrist concepts relate to some important ideas, opportunities and challenges in Information Age warfare. Finally, these will be synthesised and applied to the SAF. The main thesis is that the 'manoeuvrist approach' is especially appropriate for the SAF because it enables it to capitalise on the available opportunities to 'fight above its weight' in the 'Information Age'.

More specifically, the essay proposes a definition of the 'manoeuvrist approach' for the SAF, and a philosophy based on dislocating the enemy by targeting his will to fight. This is reinforced by the manoeuvrist maxims of speed, surprise, reconnaissance-pull, surfaces and gaps, focus of effort, orchestration and directive control.

Industrial and Information Age Warfare

According to Alvin and Heidi Toffler, we are currently witnessing a revolution in military affairs (RMA) that is as significant as the Industrial Revolution of the 18th century.³ Before then, conflict was characterised by the Agrarian Age methods: badly organised and ill-equipped armies that engaged in seasonal fighting. However, since the 1700s, the industrial civilisation has represented conflict. Mass armies, using standardised weaponry produced in assembly lines, engaged in unlimited warfare based on attrition. The machine gun, mechanised forces and aeroplanes caused the development of entirely new tactics. War shifted from a struggle between rulers to one between people embodied by nation-states. This war form reached its apex with the development of huge nuclear arsenals by the superpowers.

However, with the advent of the silicon chip, society entered the post-industrial 'Third-wave' or Information Age, with a concurrent move away from attrition-based to knowledge-based warfare.⁴ Besides using precision weapons and non-lethal technology, Information Age armies will see a greater use of information technology to maintain command and control in higher tempo and operations that are more complex. Furthermore, with civilian technology catching-up and surpassing military ones, more commercial-off-the-shelf equipment will be used to wage conflict. With more sophisticated technology, forces with highly trained soldiers skilled in niche areas will replace large-scale conscript armies.

This does not mean that the Information Age will only see 'clinical-techno Third-wave' wars.⁵ Less advanced forces will seek to wage 'asymmetric' warfare. Depending on the economic status of the actors involved in the conflict, it could see a combination of all three waveforms of warfare being waged. Neither does this mean that only conventional wars will be conducted. Instead, there will be growing efforts in 'fighting for peace' with peacekeeping operations and other Operations Other than War (OOTW).⁶ The net result: a widening of the spectrum of conflict in the Information Age.

Relevance of Manoeuvrist Concepts in Info Age Warfare

The main ideas marking an important break with the Industrial Age conflict are:

- Information Dominance
- Non-linearity;
- Disengaged combat
- Synergy.

The discussion will also examine whether manoeuvrist concepts (highlighted in *italics*) are appropriate for the new ideas, opportunities or challenges of 'Information Age' warfare.

Information Dominance

With integrated command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems, Information Age warfare will be driven by rapid, precise and broadly shared information among modern military units.⁷ Information dominance's central⁸ idea is to acquire the necessary information for friendly forces while denying it to the enemy.⁹

As opposed to the Industrial age's stovepipe nature of passing information up and down the chain of command, information dominance envisions Internet-like connectivity from tactical through to strategic levels. This will generate a common tactical picture that facilitates rapid deployment, manoeuvre and fire support for small, widely dispersed units.¹⁰ Industrial Age hierarchical-based military structures will move toward network-oriented models.¹¹ This could see armies replacing unwieldy divisions with smaller, extremely mobile and independent units as basic combat units, capable of influencing large areas of terrain with the ability to switch rapidly between operations, and linked by network-based structures.¹²

Furthermore, the common situational picture will radically compress time-space relationships and contribute to the growing interrelationships between the levels of war. Commanders will face problems of 'growing complexity with shorter decision times'.¹³ Similarly, actions of tactical units could bypass the operational level and directly affect the strategic level.¹⁴ This creates a danger of commanders developing a growing tendency to 'micro-manage' subordinates.¹⁵

Manoeuvrist concepts fit very well under information dominance. Better situational awareness relative to the enemy will allow future militaries to Observe, Orientate, Decide and Act (OODA) faster. It will allow forces to improve their operational worth (*momentum*) dramatically, without increasing their mass, simply by increasing the speed and ability to *accelerate*. This faster *tempo* will disrupt the enemy's ability to make timely decision.¹⁶

In theory, if there is perfect situational awareness, *preemption* - to appropriate or seize for oneself before others¹⁷ - becomes very likely. Knowledge of enemy dispositions and intentions enables commanders to emphasise speed over caution and make unexpected rapid moves before its time. However, as Clausewitz's 'fog of war' continues to thrive in the Information Age, *temporal dislocation* will be more realistic. This is the art of rendering enemy strength irrelevant through the manipulation of time, and is the basis for *surprise* in war.¹⁸ By acting faster than the enemy can, it undermines his decision-making ability, ultimately leading to the enemy's disintegration.¹⁹

Auftragstaktik or *directive control* will help alleviate the problems of micro-management and compressed time-space for commanders.²⁰ This requires a commander to direct what is to be achieved by making his intentions thoroughly clear and allocating necessary resources to realise these intentions. However, he concedes to his subordinates the license to accomplish these tasks. It aims to capitalise on every opportunity that presents itself on the battlefield, reducing the requirement for detailed orders and coordination.

Non-linearity

Non-linearity²¹ refers to distributed operations throughout the battlespace. It differs from the Industrial age's linear approach where the opposing forces' front and flank delineate the battlefield. Non-linearity results from technological advances enabling land forces to manoeuvre, acquire and engage targets throughout the battlespace. Rather than large units moving solidly in a single line of advance, future warfare may see a more confused patchwork of dispositions, with friendly forces in front of, among and behind enemy forces. The battlefield will take on more of Sun Tzu's 'deceptive and formless' principle of warfare.²²

Manoeuvrist concepts are again appropriate in this context. In a non-linear battlespace, certain areas are blind to commanders for periods. This facilitates *positional dislocation* - the enemy strength is rendered irrelevant by causing the enemy to be in the wrong place, the wrong formation, or facing the wrong direction.²³ The enemy could be physically removed from the *decisive point* (a major event that is a pre-condition to the successful disruption of the centre of gravity of either combatant) by the use of technology. For example, large electromagnetic signatures with minimal forces could be used to create a feint to draw away the enemy reserve. Alternatively, it can mean removing the *decisive point* away from the enemy by using stealth technologies to manoeuvre away from an enemy force and decisively engage him in the rear area. By fighting deep, close and rear battles all at once, non-linearity supports the concept of *simultaneity* - overwhelming the enemy through concentration and massing of effects and not sequential events.

In line with *directive control*, non-linearity also reinforces the need for *reconnaissance-pull*.²⁴ This leaves the initiative with the subordinate commanders to move along different routes towards the enemy. The superior commander seeks gaps or weakness in the enemy's *surface*. Once identified, the commander exploits this and penetrates the *gaps*. This allows Information Age militaries to achieve economy of effort by allowing the commander to direct the *Schwerpunkt* or 'main effort' through the *gaps*.²⁵ This will avoid the enemy's strength while concentrating resources against his weaknesses.

Disengaged Combat

Disengaged combat²⁶ complements information dominance and non-linearity by enabling militaries to engage the enemy from a healthy distance. One component is *precision strike* - the ability to locate and destroy high-value, time-sensitive targets while minimising collateral damage and enemy counter-strikes.²⁷ A second component of growing importance is *information operations (IO)* - actions taken to affect adversary information systems while defending friendly ones.²⁸

Concentration of fires (both physical and non-physical) will grow in importance relative to the concentration of mass, with less need for units to be massed together to achieve their effect. The combination of precision weapons and IO will degrade the enemy's C4ISR systems and personnel through physical, psychological and electronic attack and deception. The net result is small combined-arms forces, equipped with advanced long-range sensors, PGMs and offensive and defensive IO systems, capable of locating and hitting the enemy at a distance, while using manoeuvre to achieve dispersion and effect.²⁹

Here again, manoeuvrist concepts are relevant. Disengaged combat will enhance the ability for functional dislocation - setting aside enemy strength by causing it to be dysfunctional, generally through the application of technology or combined arms tactics.³⁰ While the enemy could move forces to counter ground manoeuvre threats, he may be unable to cope with long-range precision strikes that disable essential firepower assets while IO jam critical command-and-control nets and collapse important information networks. By being unable to deal with the combined effects of precision strikes, IO and ground manoeuvre,

the enemy's strength is effectively neutralised. In fact, it takes the concept of *force dichotomy* a step further into the electromagnetic spectrum. In this case, the '*ordinary/orthodox*' force could be the manoeuvre forces pinning down the enemy while the '*extraordinary/unorthodox*' force could be the precision fires and IO which combine together to overwhelm them.³¹

Synergy

The combined manoeuvrist effects are represented under the Information Age concept of 'Synergy'³² - the ability of different branches, services and countries to fight effectively together where the effectiveness of the whole that is greater than the sum of its parts.

The RMA is only revolutionary when the various aspects work together and as war becomes faster and more complex, the need for tighter co-operation among branches and services becomes greater. Jointness will be facilitated with the integration of C4ISR and doctrine across services with more forces incorporating air, land, sea, and space elements in the future.³³ There will also be moves towards joint headquarters removing component commands³⁴, and perhaps doing away with service divisions, creating true joint organisations along the lines of the US Marine Corps.

Similarly, the widening spectrum of conflict combined with declining defence budgets will mean no single nation will be capable of maintaining armed forces that can deal with everything.³⁵ The future will see more multinational 'modular coalitions' with countries, where each ally provides specialised military forces and technologies that meet the requirements of the operation.³⁶

The manoeuvrist concept of *synchronisation or orchestration* is relevant here - the co-ordinated application of mass effects rather than mass forces to destroy the enemy's *centre of gravity*.³⁷ There has been a red-herring argument about orchestration opposing the concept of *directive control*. In reality, both work together. *Orchestration* is concerned with the effects can be achieved from both physical and non-physical manoeuvres using various assets from the different branches, services and nations. *Directive control*, on the other hand, focuses on the subordinates ability to fulfil their responsibility of achieving their part of the effect enhanced by initiative and creativity. The sum of the effects is intended to overwhelm the enemy thereby causing systemic collapse.

Until now, the 'manoeuvrist approach' has focused on the enemy. However, it could equally be used against friendly forces. The progress of civilisation breeds growing intolerance to casualties³⁸, and this is increasingly seen as a friendly centre of gravity. In the context of OOTW, hostile elements opposed to UN peacekeepers could initiate high-risk actions that could cause massive casualties early on in the operation, thereby causing UN coalitions to fracture by removing public support. This effectively causes moral *dislocation or disruption*³⁹ - the practice of defeat by attacking the *centre of gravity* thereby offsetting strength through the defeat of the will to fight. The aim is to avoid having to physically destroy the entire physical component of friendly forces by direct attack, but rendering it inert attacking the Achilles heel and capitalising on the intangibles of war - political support, psychology, morale and fear. This detrimental psychological effect will ultimately undermine the friendly force's will to fight.

Within the four major Information Age characteristics of information dominance, non-linearity, disengaged combat, and synergy presented above, it appears that manoeuvrist concepts are not only relevant in future conflict but actually reinforce the ability of armies to fight. A common theme has been dislocation with the related concepts of positional dislocation, functional dislocation, temporal dislocation, and moral dislocation. These should form the backbone of the SAF's manoeuvrist approach that must be reinforced by some of the other manoeuvrist concepts mentioned above.

Relevance to SAF

Manoeuvrist concepts and dislocation warfare have been enthusiastically embraced by many modern armed forces. However, before proceeding further, these concepts must be placed within the unique context of the SAF *vis-à-vis* other armed forces. Of note is that the SAF's operations will be constrained by three factors:

- **Geography**

It lacks strategic depth and is required to defend Singapore against potential aggressors within a complex littoral region.

- **Population constraints**

Given the population constraints, it will be unable to generate capability based on human mass.

- **Budgetary constraints**

It will face budgetary constraints of slower economic growth in the future as compared to the past.

Together, these constraints mean that the SAF will have to 'fight above its weight', producing results disproportionate to its size and capabilities. What is needed is a warfighting philosophy that overcomes these constraints. A manoeuvrist approach consisting of the three elements below is therefore especially relevant to the SAF as it enters the Information Age:

- An *understanding* of the manoeuvrist approach
- A manoeuvrist *philosophy*
- Six manoeuvrist *maxims*.

Understanding the Manoeuvrist Approach

A simplistic approach to manoeuvre only focuses on one or two dimensions. In this approach, manoeuvre will concentrate in the more rapid and intelligent movement of friendly forces in the battlefield relative to the enemy to create favourable situations for battle. However, in the Information Age, conflict will be waged across a multi-dimensional battlespace and not merely be restricted to positional manoeuvres.

Hence, the Information Age will see the rise of knowledge intensive warfare. In this complex and often confusing state, the SAF needs to target the enemy's *centre of gravity* - the mind of the enemy commander and the will of his forces to fight. By focusing on that, actions can be taken to minimise own casualties while bringing about actions that can result in a swift victory.

Hence, an appropriate definition for the SAF's manoeuvrist approach would be:

*"... an approach to operations in which shattering the enemy's overall cohesion and will to fight is paramount ... by inflicting on him a series of rapid, violent and unexpected actions which create a turbulent and deteriorating situation in which he cannot cope."*⁴⁰

An SAF Manoeuvrist Philosophy

As part of this understanding of the manoeuvrist approach, the SAF should adopt a *dislocation* philosophy of manoeuvre. *Preemption*, while superior, will not always be likely given that perfect information dominance will be impossible with the intervention of the 'fog of war'. In addition, *preemption* may be extremely difficult

in modern coalition operations, especially in peacekeeping or peace-enforcement when other contributing nations view preemption as unfair, distasteful, or even rash.⁴¹ Even at the operational and tactical levels, considerations of sensitivities of coalition partners and Rules-of-Engagements will work against *preemption*.

Hence, perhaps a better approach for the SAF will be to adopt the more easily applied philosophy of dislocation. As shown above, dislocation concepts are highly relevant and well suited for the SAF in the Information Age. This is because *dislocation* provides an extremely economical means of defeating the enemy by setting aside the enemy's strength, rather than expending time, lives and resources to destroy him.⁴² Better projection assets and mobile units that can execute envelopment, turning movements and infiltration can achieve positional dislocation. In terms of weapon systems, the SAF should even consider fielding 'knowledge edge' prototype technologies in order to achieve a *functional dislocation* of an enemy strength, as he will be unable to develop any countermeasure quickly enough. By employing its advantage in speed and intelligence, the SAF will be able to fight a series of engagements that anticipates enemy counteractions and cause *temporal dislocation*.

Ultimately, the combination of all these dislocation effects will create *moral dislocation* through a combination of well-integrated rapid and bewildering (even 'patternless') physical and non-physical operations. Even if the enemy has numbers and 'peer' technology, without a will to win, he will be defeated.

SAF Manoeuvrist Maxims

Sound manoeuvrist ideas can add much support to a manoeuvrist philosophy. Based on the earlier discussion, the following six maxims could be adopted by the SAF to reinforce the philosophy of dislocation:

- *Speed and surprise*. 'Information Age' technologies will increase battlefield momentum, acceleration and tempo. A smaller force can then surprise a larger foe by getting inside his decision cycle and prevent him from reacting in time or space.
- *Reconnaissance-pull*. Working in a large and complex littoral environment, commanders cannot cover all ground and must exploit new technology that process intelligence rapidly by reacting to information from forward units.
- *Surfaces and gaps*. Once the enemy's strengths and weaknesses are identified, actions can be taken to avoid his strengths while exploiting the weaknesses.
- *Focus of effort*. To exploit the enemy's weakness with limited resources in a climate of austerity, the resources available must be focused on the Schwerpunkt. However, this focus must change if a better opportunity should present itself.
- *Orchestration*. To achieve economy of effort, actions from different branches, services and coalition partners must be orchestrated to present a series of multi-dimensional dilemmas that will overwhelm the enemy's ability to conduct coherent operations.
- *Directive control*. This command and control philosophy will alleviate the problems of commanding in compressed time and space, information-overload and micro-management, while encouraging creativity from subordinates.

These maxims, when developed and applied at all levels of military training, will form key enablers for the successful execution of *dislocation* in the Information Age.

Conclusion

Will the SAF maximise the potential of new technologies, emulating the Japanese in World War II, or will it merely integrate them into old ways of fighting, as the allies did initially? While the Japanese success at Pearl Harbor and Malaya could be characterised by *preemption*, these actions were mainly relevant at the higher strategic-political level.

Instead, as the opening quote alludes, at the operational level, the SAF should adopt a more appropriate manoeuvrist approach' in the Information Age that focuses on dislocating the enemy through intangibles of

war like time, psychology, beliefs and morale. By use of both physical and non-physical manoeuvre, the approach will seek to destroy the enemy's cohesion and will to fight. Furthermore, six important manoeuvrist maxims of *speed and surprise, reconnaissance-pull, surfaces and gaps, focus of effort, orchestration* and *directive control* should reinforce this philosophy. Together, this warfighting philosophy will drive the other changes in organisation, tactics and acquisitions. If this approach is taken seriously, the SAF will be able leap ahead, allowing it to 'emerge' successfully into the new millennium, ready to 'fight above its weight'.

Endnotes

1 Quoted in Leonhard, R. 1998, *The Principles of War for the Information Age*, Presidio Press, Novato, CA, p 205.

2 'The Future of Warfare', *The Economist*, 8 March 1997, p 21.

3 Toffler, A. & Toffler, H. 1993, *War and Anti-War: Survival at the Dawn of the 21st Century*, Boston, Little, Brown, p 32.

4 Toffler, A. 1980, *The Third Wave*, Morris, New York, pp 23-25.

5 Thomas, K. 1997, 'The RMA - Wrestling With Mythology', in Thomas, K. (ed) 1997, *The Revolution in Military Affairs: Warfare in the Information Age*, ADSC, Canberra, pp139-140.

6 Toffler, A. & Toffler, H. 1993, op cit, pp 273-295.

7 Sullivan, G. & Dubik, J.M. 1994, *War in the Information Age*, US AWC, SSI, Carlisle Barracks, PA, Apr 1994, pp 46-62.

8 The term Information Dominance is taken from Mazarr, M. 1994, *The Revolution in Military Affairs - A Framework For Defence Planning*, Carlisle Barracks, PA, US AWC, SSI, 1994, p 21. It has not changed significantly with the current US military using the term 'Information Superiority' - see Chairman of the Joint Chiefs of Staff, 1997, *Concept for Future Joint Operations: Expanding Joint Vision 2010*, May 1997, Chapter 5.

9 Van Crevald, M, 1989, *Technology and War*, New York, Free Press, p 311-312 - he speaks of the critical importance of the growing importance of the informational infrastructure that links a force together.

10 Cebrowski, A.K., 1997, 'Network-Centric Warfare: A Revolution in Military Affairs', presentation to the 1997 Technology Initiatives Game, 8 Sep 1997.

11 Belen, F. 1999, 'Littoral Lightning', *Armed Forces Journal International*, July 1999, p 14.

12 Examples of these smaller, more mobile and more potent forces are 'Combat Groups', Combat Task Teams or Hunter Warrior Teams (see Macgregor, D.A., 1997, *Breaking the Phalanx - A New Design For Landpower in the 21st century*, CSIS, Washington (D.C.), p 74; Dunn, P. 1997, 'Time x Technology x Tactics = RMA.', in Thomas, K. (ed) 1997, *The Revolution in Military Affairs: Warfare in the Information Age*, ADSC, Canberra, pp 64-65; or Schmidt, J.F. 1998, 'A Critique of the Hunter Warrior Concept', *Marine Corps Gazette*, June 1998, p 14.)

13 Jablonsky, D. 1994, 'US Military Doctrine and the Revolution in Military Affairs', *Parameters*, Vol XXIV, No 3, Autumn 1994, p 27.

14 Krulak, C.C. 1999, 'The Strategic Corporal: Leadership in the Three Block War', *Marine Corps Gazette*, Jan 1999, pp 21-22.

15 Cohen, E. 1994, 'The Mystique of US Air Power', *Foreign Affairs*, Vol 73, No 1, Jan-Feb 1994, pp 112-116.

16 Simpkin, R. 1985, *Race to the Swift: Thoughts on Twenty First Century Warfare*, Brassey's, London, pp 102-3 and 117-43.

17 Leonhard, R. 1991, *The Art of Manoeuvre: Manoeuvre-Warfare Theory and Airland Battle*, Presidio Press, Novato, CA, p 62.

18 Leonhard, R. 1998, op cit, p 65.

19 Lind, W.S. 1985, *Manoeuvre Warfare Handbook*, Westview Press, Boulder, pp 4-6.

20 Lind, W.S., 1985, op cit, p 13.

21 Australian Army 1998, *LWD-1: The Fundamentals of Land Warfare*, Doctrine Wing, CATDC, p 4-14.

22 Sawyer, R.D. 1996, *The Complete Art of War - Sun Tzu and Sun Pin*, Westview Press, Boulder, Colorado, p 25, 77

23 Leonhard, R. 1998, op cit, p 65.

24 Lind, W.S., 1985, op cit, p 18.

25 Lind, W.S., 1985, op cit, p 18.

26 Mazarr, M. 1994, op cit, p 23.

27 Johnson, R.E. 1997, 'Function-Based Assessments and RMAs', in Thomas, K. (ed) 1997, op cit, p 87.

28 Chairman of the Joint Chiefs of Staff, 1997, op cit, p 41.

29 See Sullivan, G. & Dubik, J. 1993, op cit, pp 19-21, for a more detailed exposition of Minimum Mass Tactics.

30 Leonhard, R. 1998, op cit, p 65.

31 Simpkin, R. 1985, op cit, pp 93-115.

32 Mazarr, M. 1994, op cit, p 12.

33 Miller, P.D. 1993, 'A New Mission for Atlantic Command', *Joint Force Quarterly*, No 1, Summer 1993, pp 80-87.

34 Ankersen, C.P. 1998, 'A Little Bit Joint - Component Commands: Seams, Not Synergy', *Joint Force Quarterly*, Spring 1998, p 118.

35 Scales, R.H. Jr. 1999, 'In War, the US can't Go It Alone', in Scales, R.H. Jr. (ed) 1999, *Future Warfare*, US AWC, SSI, Carlisle Barracks, PA, pp 203-205.

36 Thomas, K. 1997, op cit, p 143.

36 Headquarters Australian Theatre, 1998, *Decisive Manoeuvre: Australian Warfighting Concepts to Guide Campaign Planning*, Interim Edition, 2 January 1998, Defence Publishing and Visual Communications, Canberra, p vii - The *centre of gravity* is the key characteristic, capability or locality from which a military force, nation or alliance derives its freedom of action, strength or will to fight.

37 Howard, M. 1994, *How Much Can Technology Change Warfare?*, Presentation to the Fifth Annual Conference on Strategy, US AWC, Carlisle Barracks, PA, 27 Apr 1994.

39 Leonhard, R. 1991, op cit, p 73. It is called *moral* dislocation in Leonhard, R. 1998, op cit, p 65.

33 British Army 1996, *Design for Military Operations - The British Military Doctrine*, pp 4-21 to 4-22. This is similar to the definition used by the US Marine Corps 1989, *FMFM1 'Warfighting'*, Chapter 4, but has the

additional element of the enemy's will to fight. The USMC definition only focuses on shattering the enemy's cohesion.

41 Australian Army 1998, op cit, p 3-6, acknowledges the difficulty of modern armed forces in liberal democracies to exercise *preemption* due to 'legal, moral and ethical' considerations.

42 Leonhard, R. 1998, op cit, p 255.

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The Need for a Leadership Culture and Initiative for Manoeuvre Warfare

by LTC Tan Kim Seng

This article discusses the importance of a positive leadership culture and the need to inculcate initiative in our officers and men a process for manoeuvre warfare.

Lessons from the Past

To change an entire army to a new frame of mind is no easy task. Change itself is never easy to manage. Hence, we need to adapt to change in the military in a manner that is consistent with our culture. That is the crux of the problem in the Army today.

The starting point of this discussion is the German Army and the birth of *auftragstatik*. The German model is used as the basis of the discussion as this is the best analytical tool to use to understand the time span needed to implement the idea in the German Army and how the use of initiative by its leaders and soldiers at all levels influenced their success in two World Wars. *Auftragstatik* formed the rubric of the German concept of warfare. It was not easy to successfully implement the idea of *auftragstatik* to the entire German army.

Auftragstatik started as early as the 19th century in the Austro-Prussian War (1866) and the Franco-Prussian War (1870-71). In these wars, the Prussian Army realised that the increased lethality of weapons forced greater dispersion among forces on the battlefield. Commanders did not fully observe or control their forces in detail as before. Frequently, lower level commanders at battalion-level were forced to employ their units in fast moving situations without detailed orders from their superiors. They had to make decisions on their own without referring to their superiors. The results were frequently disastrous because these junior leaders were not trained to undertake such functions.

Out of necessity, the Prussian Army studied the problem to rectify their acknowledged deficiencies in decision-making at the lower echelons. The Prussians then commissioned the *Drill Regulations of the Infantry* (1888). It stipulated that commanders should give subordinates general directions of what was to be done, allowing them freedom to determine how to do it. That was the start of allowing decision-making undertaken at the lower levels in the Army. It encouraged commanders to be "thinking leaders" used to making tactical judgements on their own and who would also be less likely to "freeze up" when faced with new situations without formal instructions.

World War I saw a pendulum-like swing in the application of the *Drill Regulations of the Infantry*. However, the application waned due to a great influx of reserve officers who were not adequately trained for its radical change. The winds of change did not filter down to the Reserve Corps. This did not deter the Germans from fully adopting the concept of *auftragstatik* and allowing lower level commanders to make decision on their own. This episode demonstrates an important lesson: despite the hard knock, the Germans were able to get up on their own feet to continue to press for a change to improve the army and uplift its image.

In the post-World War I era saw the German Army evinced a stronger institutional commitment to developing leaders who were willing and able to take prudent and independent action to handle the unexpected.

This desire for increased leadership initiative matched the German army's perception of the nature of war. It is worth studying how the Germans successfully took their stand on the concept of *auftragstatik*. Their concept of war comprised :

- The principles of manoeuvre and speed were of utmost importance in any battle.
- When faced with uncertainties, the offensive manoeuvres offered the best chance to shock and dislocate the enemy force so that it could be destroyed at the least cost to them.
- Every situation in war is unique. Competent leaders were required to make quick appreciations and decisions, and act swiftly. Leaders needed to be intuitive and creative to overcome any new situations which arose.

These three factors formed the basis of Germany's success to push for change nation-wide. The German view of war fully supported granting junior leaders greater scope to exercise initiative - if that was what it took to generate victory. This artistic perspective of war shaped the framework to exercise of leadership initiative. This framework provided three essentials crucial for the development of *auftragstatik*: good leadership qualities, sound methodology for issuing and carrying out orders, and enlightened senior-subordinate relations.

For leadership qualities, initiative in the leader stems from his willingness to step forward; take charge of a situation and act promptly, completely on his authority, if necessary. To do this under stressful conditions would mean that he must be willing to assume responsibility and have moral courage, self-reliance and self-confidence - attributes highly prized by the German Army.

Junior leaders were encouraged to assume great risk willingly. The German Army framed two rules for risk-taking:

- In situations clearly requiring independent action, a leader had not only the latitude to make them, but a solemn duty to do so.
- Inaction, not wrong action based on a sincere effort to act decisively, is a cardinal sin. The former is considered a shameful act of leadership while the latter, an honourable effort to practise the act of war fighting in which no single action guarantees success.

Prudent risk-taking by the thinking leader was strongly encouraged.

The second part of the framework for exercising initiative was in the methodology of issuing and carrying out orders. In present day terminology, this is known as *command and control*. The German Army believed that commanders should only tell their subordinates what tasks were to be accomplished, not how to accomplish them. They were given adequate resources and coordinating instructions to accomplish the tasks within set limitations. This philosophy in present day context is called 'mission', 'demand' and 'support'. The aim was to allow for greater freedom of action. Orders were brief and usually verbal. When issuing orders, the most important part was the statement of the commander's intent. Subordinates using initiative in response to the unexpected had to conform with this intent. Thus the commander's intent promoted unity of effort in fluid situations that failed to conform to plans and expectations.

Under exceptional circumstances, subordinates could adjust the tasks assigned, assuming full responsibility for such action, as they deemed fit. This system did not undermine the control of subordinates as long as the commanders positioned themselves at a vantage location, usually in front, to influence the situation. They supervised and controlled, but in a manner encouraging initiative and thought in subordinates. They were expected to overcome all tactical situations within their means and scope and recommend changes to orders based on a continuous evaluation of the situation.

The final element of the framework for exercising initiative was that of senior-subordinate relationships. The onus of teaching the subordinates the desired character and leadership attributes rested on the shoulders of the commanders. German commanders spent much time teaching subordinates how to think on their feet in making an appreciation of the situation and applying tactical principles. The aim was to educate them on how to think rather than what to think. Superiors and subordinates spent time together in map exercises, terrain walks, sand table exercises and field exercises discussing tactical problems. A central focus of every field exercise was the development of subordinate leaders. This involved a close teacher-student relationship as in coaching.

The result was a common thought process between the superiors and their subordinates on tactical problems thus allowing the latter to read between the lines of the commander's intent. Conversely, it allowed the commanders to anticipate intuitively how his subordinates would exercise freedom of action in various situations. From this close relationship, mutual trust developed, which in turn, nourished initiative. The subordinate would also feel satisfied that his exercise of initiative in battle generally conformed to his commander's intent. The commander, on the other hand, would trust his subordinates with a greater rein to accomplish tasks.

Another successful way initiative was inculcated was the German training and education process used in both the units and military schools. These institutions provided the basic framework and foundation to foster a common perception to the nature of war, leadership traits, the importance of initiative and proper senior-subordinate relationships, and how to issue orders. To ensure understanding and application of the tactical principles, common thought processes were used in different tactical operations. Military terminology was precise, standard and widely understood. With this achieved, the commander could sense for himself how his unit as a whole might respond in given situations. This common outlook also reassured both leaders and subordinates, reinforcing a sense of mutual trust and dependability conducive to the development of initiative and freedom of action.

When World War II began, the German Army stunned the world with their speedy conquest of Europe. Their superior performance was attributed to their command emphasis on *auftragstatik* and the need for initiative at every level.

The German Army took almost 75 years to change the entire army to one solidly established with a culture of initiative and leadership, encouraging the implementation of a new frame of mind - the Thinking Army. Many obstacles stood in the path towards the change but the German Army was able to overcome them, learning and re-learning from their mistakes. This did not come naturally: it took some hard knocks in war to realise why the change was necessary for the army.

Our Situation

The SAF has already taken the bold step to adopt manoeuvre warfare in its training. Both the concept and philosophy are slowly evolving in the doctrinal manuals. We should be heading in the right path or are we? To change overnight and adopt the philosophy would be too hasty. Friction along the way is a major obstacle to learning in the organisation. The Germans took almost a century to change and over 56 years, they were successful in applying their ideas to war. Hence to think "manoeuvre" and be a Thinking Army we need to start on the right footing. What is the right footing? The answer lies in two very important points that we can be gleaned from the German experience:

- A leadership culture that fits the SAF officers, warrant officers and soldiers; and
- The need to inculcate initiative through the ranks.

The two points are related: to practise manoeuvre warfare, we need a leadership culture that clearly favours initiative.

Leadership Culture

Leadership culture can be defined as the ability to adapt the army to a de-centralised command structure that favours the use of initiative. The army in the 70s and 80s has long been operating using the traditional authoritarian and quasi-authoritarian approach requiring strict obedience to orders to accomplish the mission. We have the knack for long and detailed orders even before executing the mission. Towards the 90s, the environment has become more conducive for mission accomplishment. A key tenet of manoeuvre warfare: commanders gear themselves to accomplish their assigned missions according to the commander's intent. The value of de-centralised command lies in the fact that it treasures the initiative of subordinates, striving to harness their creative energies towards simultaneous problem-solving at all levels. The desired

effect is speed in operations based on the ability to make sound judgements developed through trial and error. Adequate, not perfect, solutions are sought. We should get into the culture of issuing general instructions, relying on subordinates to get the job done within a broad guideline. One important caveat to this is that subordinates must first be professional in getting the job done in the most efficient manner without his superiors having to supervise it. He must have the necessary experience to do things right. Plans must be viewed as provisional, with the understanding that no plan is ever implemented exactly as envisioned. Commanders must think on their feet, always aggressively analysing, recommending, anticipating and adjusting.

Our leadership culture today suffers from the stigma of 'loss of face'. There is always the fear that mistakes by subordinates will be seen as a loosening of the commander's rein. 'Losing face' at a major exercise, a major inspection or evaluation is not easy to accept. During a setback, commanders look for scapegoats to pay the price for the mistakes. We need to change this frame of mind and understand that this is a major obstacle in developing initiative in the officers and men alike. Manoeuvre warfare emphasises trust between the superior and his subordinates. Over-controlling or playing safe is a reflection of the commander's insecurity. William S Lind, a renowned manoeuvre warfare theorist, advised,

"... to be able to fight the enemy using manoeuvre warfare, you need a command and control system based on leadership and monitoring Both leadership and monitoring are valueless without trust.... trust by the commander that his subordinates will understand and carrying out his desires, and trust by those subordinates that they will be supported when exercising their initiative...."

Thus, initiative, if it is to be encouraged in the army, must be supported by a good leadership culture, a viable command and control system and mutual trust at all levels.

An integrated theory of the nature of war is needed to fight in the near future in addition to desirable character and leadership attributes; command and control, senior-subordinate relationships, application of tactics, acquisition of new knowledge, education and training. The move towards this culture is ultimately to develop a new frame of mind - the "manoeuvre cast of mind" - the crux of the manoeuvre warfare concept.

A Culture of Initiative

Manoeuvre warfare emphasises initiative and self-discipline, not blind obedience or discipline. Each soldier and officer is nurtured on the Chinese tradition that obedience is more important than initiative. For 18 years prior to his NS, the average male is subjected to this form of tradition and cannot be expected to quickly adapt to a system of doing things on his own when he enters the Army. We must provide both the training and the environment for initiative to develop. This should be aimed at promoting morale and unit cohesion. Unit commanders can promote these intangible factors to elevate the culture of initiative. The starting point is to delegate more responsibility to our junior commanders and soldiers. It requires giving them authority and responsibility and giving them the implicit trust to get the job done. This however, does not mean that standards are lowered or that mistakes are not corrected. Junior commanders and soldiers, in most cases, will live up to expectations. They need to do it first, know what is wrong, and then correct their mistakes. They need to gradually be given more latitude to shoulder heavier responsibilities. Each leader and soldier will begin to invest more effort and pride in ensuring that the best is exacted from their respective unit, company, platoon and section.

A culture of independent thinking and aggressive decision - making for peacetime training is crucial in developing initiative. Commanders and soldiers need to be encouraged and trained to make decisions at short notice. If every OC refers to the CO for a decision, then the chain of command becomes cumbersome. Unit commanders at all levels must move away from the insecurity complex. Change, if managed well, is for the good of the Army, not the individual. People are unwilling to change or make partial changes only to find faults and then revert to the old ways of doing things. The famous saying, "the army is going round in circles" is a symptom of this insecurity complex.

Armour officers, by the nature of their arms and training, are capable of this independent thinking and aggressiveness. The officers' already have the frame of mind; they are able to think fast, think of manoeuvres and take action. The other arms are also capable of it with their training, pride and ability to fully appreciate the capabilities of their organisation, training and weaponry. Those in the infantry can be like them. Our battlefield operating systems allow it and is intended to do just that. It is timely to start inculcating initiative in the army. We must develop an attitude of mind that favours initiative. This can further gel the leadership culture in the army today.

What Has the SAF Done?

The SAF is now promulgating the new doctrine of the adopting a "manoeuvre approach" towards meeting the new challenges in the battlefield. Our officers and men have been trained to embrace this approach to war.

To facilitate the leadership culture, the SAF has already adopted the mission, demand and support (MDS) philosophy to training. This philosophy fully supports the view of mission-oriented training and gives more latitude and focus to commanders on the ground to train their men effectively. Coupled with the new method of issuing orders centred on the commander's intent, we should be able to institutionalise the approach to warfare with a new frame of mind at all levels.

Our stand on operational discipline in peacetime and on the battlefield must be clearly stated. The pamphlet, *Military Discipline*, compiled and distributed by SAFTI Military institute's Curriculum Branch in 1995, provides a good guide to inculcating operational discipline and initiative in our daily life and field training. The officer corps must read this pamphlet and read deep into the intent behind it, to operationalise the many ideas and guidelines in it.

Our training environment is slowly changing to accommodate the manoeuvre approach to warfare. Training in such a manner is to create in our officers and men a frame of mind to allow them to think aggressively. Thus the emphasis is on independence, acceptance of responsibility and demand the initiative; and all these should encompass training to fight battles, not merely to prepare them for it. Allowance should be provided for mistakes and failures in exercises, so that they can learn from mistakes rather than portray victory all the time. New emphasis must centre on teamwork, ability to read the situation and to extemporise. This would reinforce the need for our officers to know the mind of their commander, and vice versa. This adds weight to the German practice of commanders being responsible for promoting their officers, thus ensuring a unity of thought and consistency throughout the formation.

Conclusion

The SAF has adopted manoeuvre warfare from the top. An important feature is the "institutional will" shown by the Army to continue to change for the better. We should be adopting the manoeuvre approach to warfare akin to *auftragstatik*. If the Army is to adopt the correct sequence in creating a new leadership culture and a culture of initiative, then it must begin by creating the right frame of mind in our troops and officers. The German effort took almost a century to change and about 56 years to see the fruits of their labour in WWII. Manoeuvre warfare cannot be easily transplanted from the German model to the SAF. Careful study, the right leadership culture and institutional commitment are needed to implement it successfully SAF-wide. It should not be imposed on the officers and men: it should come naturally from the training.

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6. *Auftragstatik* is a tactical concept of command which has generally been loosely defined. It is narrowly applied in most cases to mean "mission-oriented orders". However, in this essay, it is taken to mean a broader perspective, encompassing of the German combat philosophy.
7. Martin Van Creveld, a renowned military historian, regards initiative as the key manifestation of an army's fighting power. He defines it as the sum total of the mental qualities that make armies fight. It is this quality that makes armies fight. It is this quality, he says, that makes the subtle difference between an effective and an ineffective army.

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Operations Other than War: The Golden Hour of the SAF Medical Corps

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There is a tide in the affairs of men,

Which, taken at the flood, leads on to fortune;

Omitted, all the voyage of their life

Is bound in shallows and in miseries.

On such a full sea are we now afloat;

And we must take the current when it serves,

Or lose our ventures.

Brutus, in William Shakespeare's Julius Caesar, Act IV, Scene III 1

Brutus recognised that in every man's destiny, there is a point when for better or worse, a decision has to be made that will have far-reaching consequences. This essay contends that the SAF Medical Corps is similarly standing at such a threshold, and the increasing emphasis on Operations Other Than War (OOTW) will lead to the Golden Hour of the Medical Corps. However, a revolution and not an evolution in the concept of medical support and training needs to occur before the Medical Corps is able to rise to the challenge.

The close of the decade and the impending arrival of the new millennium has brought a realisation of the changing face of armed conflicts and conventional warfare. The spectre of a global war has given way to disparate regional conflicts, and armies the world over, have become cognizant of the fact that disaster and humanitarian relief will form an ever-increasing proportion of military duties. The SAF too recognises this and has accordingly emphasised the need for a sweeping change in concepts, much of which has been introduced in the vision of the three Services for the next century.²

It is this awareness that will provide the impetus for the flourishing of the Medical Corps in the 21st century and it is anticipated that medical operations will be in the forefront of many of our nation's deployments in the years to come.

OOTW in the SAF

From the humble beginnings of MAJ PC Mugliston's Ambulance and Bearers Section in 1901, military medicine in the SAF has progressed over the years, growing from the Senior Medical Officers' Department of 1967 to a full-fledged corps in 19973. From the operational point of view, the Medical Corps' foremost duty to provide "optimal, timely and comprehensive medical support and healthcare services in war and in peace"⁴ remains unchanged. While this responsibility will always be of paramount importance to the Medical Corps, it has also devoted much time and effort to medical deployments overseas.

Operation Palm in 1970, to aid hurricane victims in East Pakistan marked the entry of the Medical Corps (then called Medical Service) into the arena of humanitarian relief missions and was the harbinger of many such operations to come.⁵ Since then, Singapore has dispatched medical teams to Bali in 1976, Baguio in 1990 and recently Taiwan (*Operation Flying Eagle*).⁶ Of the 10 UN missions Singapore has participated in over the last decade, three have had a predominantly medical focus (*Operation Nightingale* [Saudi Arabia 1991], *MINUGUA* [Guatemala 1997] and *Operation Blue Heron* [East Timor 1999]) and our medical officers and medical orderlies have distinguished themselves under international scrutiny, winning praise for their professionalism and commitment. These humanitarian missions have proved extremely useful in assessing operational readiness and testing medical support plans. Moreover, they have "contributed to the enhanced international profile of Singapore, and given a human face to the SAF".⁷

However, these OOTW are unfortunately incidental to the day-to-day organisation of the SAF Medical Corps, and such operations are planned on an *ad hoc* basis in response to the geo-political climate. Without deriding the achievements of the Medical Corps, it is submitted that a new paradigm is necessary for the continued excellence of the Corps. While preparing for large-scale all-out warfare is still absolutely essential, to achieve the vision of being "an outstanding Medical Corps"⁸, the Medical Corps must look to OOTW and dedicate its resources to the myriad of possibilities under its umbrella.

Paradigm Shift

"As a responsible member of the world community, Singapore shows its commitment to the principles enshrined in the UN Charter through its participation in UN peacekeeping and peacemaking operations. Despite our manpower constraints, Singapore contributes to UN peacekeeping operations to the best of our ability and where our contributions would be effective."

Dr Tony Tan, Deputy Prime Minister and Minister for Defence⁹

Singapore has always recognised its manpower limitations and consequences hampering its ability to contribute to the global peace process. The Medical Corps is admirably suited to fulfill this niche role as Singapore's ambassadors in world peace as its doctors and medical facilities are already foremost in the region.¹⁰ Furthermore, our small size and largely NSF and NSmen military composition precludes against engaging in armed conflict on foreign soil. Medical assistance is readily deployable anywhere in the world and more importantly, is relatively apolitical in its approach and would be welcomed anywhere. Nonetheless, the paradigm shift is not just in the realisation of the pivotal role of OOTW, but also in the approach to planning and training for OOTW.

The NSman Medical Officer in OOTW

The role of the NSman Medical Officer is severely limited in OOTW, and perhaps needlessly so. The medical officer has two roles to play in humanitarian relief missions: coordinator and physician. These two functions can be independent of each other. The contention is that the operational experience will be more useful to the regular officer, but we argue that this only holds true for the former role. In our medical support plan for Transition To War, regular officers will hold vital command responsibilities, but the NSman doctors who have become proficient surgeons and clinicians in their civilian guise, are the ones who will provide the individual medical care and attention to our servicemen. Therefore the scope of the NSman in OOTW has to be expanded to allow for acquiring vital experience of providing medical attention out of his usual comfort zone and in austere conditions as similar to the battlefield as possible. The greater role assumed by the NSman doctor also brings the Medical Corps closer to its dream of a Level II UN Medical Support deployment.¹¹ Level II connotes surgical and anaesthetic expertise, alongside intensivists and dental capabilities.¹² The regular corps alone cannot provide this because of its small numbers.

Hence, more must be done to encourage NSmen to volunteer for deployments of this nature. While recognition and the prospects of medals and other awards are enticing, the NSman physician has to consider very tangible matters like the opportunity cost and the difficulties of leaving a practice unattended for prolonged periods. The recent appeal for NSmen to participate in *Operation Blue Heron* is a case in point.

Enthusiasm was understandably dampened by the long duration (two months) away from home and work commitments (cited by surveyed NSmen as the most important reasons for not volunteering).¹³

The Medical Corps could have taken steps to make participation more palatable. Arrangements could have been made with the Ministry of Health to provide for adequate cover and medical officers could have been offered shorter deployment periods varying from two weeks to a month. Replacements could have been cycled from Singapore via C-130s shuttling between Singapore and Darwin. Of course, it would have added to the costs and logistical headaches, but this would have been a golden opportunity to involve more of our NSmen and would have reflected well on our stand that NSmen form the backbone of the SAF.

There are inevitable worries and insecurities about entrusting NSmen to represent our country under the spotlight of the international community, but it is not impossible for NSmen to rise to the challenge. The highly successful Medical Civic Assistance Programme (MEDCAP) carried out in Cambodia by the US Army in 1997 was staffed almost entirely by reserve personnel: only two of the 11-member team were active duty corpsmen. Also, the logistics can be overcome by the clever use of modern telecommunications; the MEDCAP team members were all from different parts of the US and did not meet up until *en route* to Cambodia. All prior planning and training was done by phone and facsimile.¹⁴

OOTW is a golden window of opportunity for regular and NSman medical officers as the experience garnered and the real-time training received will remain with them and translate to better medical care for servicemen in actual operational situations.

The Medical Orderly

The function of the medical orderly, or more colloquially, the medic, also needs to be expanded. The plight of the medic is somewhat akin to that of the nurse in Singapore, seen only as the handmaiden of the doctor. But the medic can and should be much more than this. In OOTW, the medic will need to be more than just a physician's assistant. The US trains their medical corpsmen to work independent of the medical officer, and it is the corpsman's every expectation that he will be the sole medical provider in operations until the casualty can be evacuated to a higher medical echelon. Thus he is trained and empowered to decide on the need, and perform thoracostomy, intubation and other life-saving procedures on his own.¹⁵ In OOTW, the limited number of medical personnel requires medics to work alone but with proper training. Our medics will undoubtedly be up to the mark. In *Operation Blue Cross*, our senior medics had to work in isolation: the experience gave them the confidence and satisfaction of being able to apply their skills in real-life.¹⁶ From the operational standpoint, a medic similar to the nurse practitioner, will allow for the concentration of medical officers on surgical platforms and enhance the level of care in resuscitative surgery and intensive care.

There will be doubts on the proficiency of the medic in the absence of the medical officer, but enhanced training will provide the fuel. OOTW is the vehicle for medics to dismiss these fears and claim a new status for the Medical Corps.

OOTW for Training and Training for OOTW

The Korean War experience has demonstrated that civilian medical practice, even in a dedicated trauma facility, does not prepare the physician for the horrors and ardour of war.¹⁷ The spectrum of injuries seen are radically different, with a preponderance of casualties with multiple penetrating wounds. It is far more common to have three critically-ill patients and one desperate doctor than the civilian standard of three physicians and one casualty. Also, the echeloned concept of medical support, so masterfully developed during the American Civil War¹⁸, describes a sequential movement of casualties through medical stations with progressively more sophisticated resuscitative facilities. This allows for less severe casualties to be returned to the frontline, thus maximising the strength of the fighting forces; but is diametrically opposed to the single-stop care practiced by civilian tertiary trauma centres. These differences render most civilian models and experience of limited value in the military setting¹⁹ and further reinforces the necessity of providing physicians with the opportunity to practice medicine in austere field conditions under hostile

conditions. With our NSmen medical officers tasked with carrying out frontline resuscitation and surgery, it is imperative that they be trained appropriately and every opportunity be made to facilitate such training.

As described above, civilian training is woefully inadequate for military practice. Next to actual combat situations, OOTW provides the best possible training. Nonetheless, training for OOTW must begin even before the whiff of a crisis. With a more selective disruption criteria and an enhanced Medical Officer Cadet Course with grueling training worthy of officers-to-be, the SAF has achieved what Lord Lansdowne, Lord Mayor of London in 1898, described as "*officers who belong to the medical profession but who are nonetheless soldiers in the fullest sense of the word... ready to take their share, aye and more than their share, of the risks and hardships of warfare*".²⁰ However, the pendulum has swung to the other extreme: there is not enough emphasis on military medicine in the MOCC.²¹

To support our increasingly varied military activities, ranging from disaster relief to rapid evacuation of our citizens from troubled areas to humanitarian missions, the Medical Corps needs to train specifically for OOTW as well as for combat casualty missions. As shown by the experiences of the Red Cross in Somalia and Kabul²² and during *Surya Bhaskara Jaya* conducted by the RSN in Indonesia²³, basic resuscitation and primary health care with attention to basic sanitary amenities often pay more dividends than sophisticated state-of-the-art medical technology. Lt. Gen Sir William J Slim, Commander of the British forces in Burma during WW II, recorded in his memoirs that his greatest problem after supply was health: for every man evacuated with wounds, 120 had to be evacuated due to disease.²⁴ The importance of primary health matters and preventive medicine over the more glamorous 'ER-style' resuscitation and surgery must be religiously ground into every medical officer²⁵, and OOTW will provide the learning ground to crystallise classroom teaching, which is all the more abstract and distant in our pristine city.

There is no equivalent for actual deployment where unfamiliar diseases, limited resources and improvised sanitation forces one to face up to the grim reality of armed conflicts and human disasters.²⁶ Perhaps the Medical Officer Cadet Course and the Combat Medic Course should culminate in a limited humanitarian outreach mission, thus giving all our medical personnel a glimpse of the very real constraints to providing medical care during a crisis.

Medical personnel are in a unique position: the required medical skills of a physician are largely honed individually and a doctor does not need to operate within the framework of a military structure to attain the necessary standard. Whether donned in the green of the No. 4, wearing the Blue Helmet of the United Nations, or flying the flag of the International Committee of the Red Cross or *Medecins sans Frontieres*, doctors and other medical personnel can still develop and maintain the skills critical for operational readiness. The SAF should consider encouraging participation in the above in lieu of full In-Camp Training (ICT), and limit ICTs for these individuals to those necessary for integration with their units. Such a set-up may be eminently feasible for dedicated medical units like the Combat Support Hospitals.

Formal training specifically in OOTW is highly desirable and will rapidly build up a vanguard of officers with both the operational and theoretical expertise. The SAF should routinely send personnel for training courses like the 2-week programme, Operational Medicine and Operations Other Than War, conducted by the United States Navy.²⁷ Other disaster medicine and emergency response courses have been presented by the Center of Excellence in Disaster Management and Humanitarian Assistance (Honolulu), in conjunction with the International Committee of the Red Cross (Geneva) and the Pan-American Health Organization Emergency Preparedness and Disaster Relief Coordination Programme, and the Medical Corps should seek to participate actively.

Dedicated Command Structure for OOTW

With OOTW likely to hold centrestage in the new millennium, the Medical Corps should have a dedicated command centre solely to manage the compendium of resources required from the various agencies within the SAF. OOTW will always be a multi-partner initiative, not just within the various services in the SAF, but also within the context of the larger international sphere. As discussed earlier, medical services are likely to form the bulwark of Singapore's contributions in any 'global alliance', and it is only fitting that the Medical

Corps assumes command and control of such endeavours. The command centre will be responsible for maintaining a task force of volunteer medical personnel derived from not just the regular cohort, but also from the NSF pool and the NSmen strength, as well as coordinating the logistical requirements for rapid deployment.²⁸ It will also liaise with the UN Development Agency²⁹, foreign agencies, both governments and NGOs, and advise the Chief of Defence Force on matters related to humanitarian assistance. With such an "operation centre", the SAF can envisage a rapid deployment force of medical and logistic personnel, fully equipped, specially and specifically trained; able to leave for disaster-stricken areas within hours of activation. The Disaster Assistance and Rescue Team of the Singapore Civil Defence Force is a local model that can be emulated, leaving Singapore for Taiwan just hours after the devastating earthquake had struck Tai Chung.³⁰

The Golden Hour

With a clear operations concept and infrastructure, the SAF Medical Corps will be well poised to welcome its golden hour in OOTW. OOTW provides a fertile ground for training and it is undisputed that the benefits accrued from such experiences can only enhance the operational readiness of the Medical Corps. Providing UN Peacekeeping Operations multi-level medical support will allow us to develop expertise at not just basic first aid, but also in definitive tertiary-level care. Secondly, and more importantly, it will reaffirm Singapore's commitment to the UN and its ideals. The eventual realisation of a rapid deployable medical task force will be a testament to our readiness to assist our brethren afflicted by natural or man-made disasters. It will serve as a visible manifestation of Singapore's goodwill towards all nations.

Conclusion

With the growing importance of OOTW in the years ahead, the provision of medical assistance in such international OOTW is likely to be the mainstay of Singapore's international outreach. The SAF Medical Corps is at the threshold of a new era, and a concerted effort to develop its capabilities in OOTW will thrust the Medical Corps into the 21st century as truly "the pride of the SAF".³¹

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Snipers - Fitting into the Big Picture

by MAJ Lam Shin Tong

Snipers are universally recognised as specialists who are both highly trained and disciplined to carry out dare-devil missions behind enemy lines. Proven in previous wars and battles, snipers are effective force multipliers besides being potent tools to inflict psychological fear in the enemy. Ironically, integrating sniper operations in peacetime training and exercises is often over-looked by commanders. Thus, snipers are often under- or wrongly employed. This essay highlights the capabilities of snipers in the battlefield, the difficulties encountered in employing snipers in training and offers possible solutions to rectify the situation.

Saving Private Ryan, the movie, clearly depicts the havoc that snipers can create in the battlefield: a lone enemy sniper pins down a platoon on patrol in a built-up area (BUA). While the medical orderly and a few brave platoon mates risk their lives to get the injured soldiers out of the open, more soldiers are hit, one by one.

Specially trained to operate in small numbers or independently, mostly behind enemy lines, snipers can inflict psychological fear in the enemy, buy time for their own forces or even influence the shape of the battlefield. Snipers have been deployed in battles even before WWI. No one doubts their effectiveness as force multipliers. Unfortunately, in many armed forces today, including the SAF, there seems to be a lack of emphasis on their general deployment in operations. This may be due to the general lack of understanding on sniper operations, the difficulty in evaluating their effectiveness during training and the perception that sniper operations are too "micro" to be featured in the bigger scheme of manoeuvre. Thus, there is a need to discuss the possibility of deploying of snipers in operations and propose means to integrate and evaluate the sniper's deployment in training.

Sniper - A Specialist

Snipers are a special breed of soldiers. A sniper is defined as:

"An infantry soldier who is an expert marksman and observer with the ability to locate an enemy, however well concealed, then stalk up or lie in wait to kill him with one round. He is able to observe, interpret and accurately report enemy movement. He can observe without being observed - kill without being killed."

Many infantry soldiers can be marksmen but not all marksmen are snipers. Snipers must not only possess excellent shooting skills, but must also have many personal attributes such as patience, perseverance, discipline, level-headedness, and self-confidence. Snipers must have the ability to maximise the effectiveness of the weapon system, ammunition selection, and blend into the terrain to achieve his mission. To train good snipers, most military establishments pay close attention to the selection of the right candidates, teaching them the needed marksmanship skills and fieldcraft. To acquire the skills of a sniper, trainees not only spend numerous hours in the classroom and rifle range to master the fundamentals of sniping, but also experience operations in the most adverse conditions imaginable. The cold, heat, thirst, hunger or insect bites will not bother a true sniper; he is able to stay focused to get that one well-aimed shot. Thus, snipers are often the cream of the crop in the unit, possessing the necessary sniping and shooting skills and more importantly, the attitude to be the best in the unit.

Snipers in the Battlefield

History has shown in the past as well as the present that snipers contribute immensely to land warfare. Snipers alone do not determine the success of the land campaign based on the numbers killed behind the enemy line, rather the spill-over psychological effect that sniping operations create on both the enemy and

its own forces has proven to be an important factor. The general concept of sniping operations has not changed much through the years - operating singly or in pairs, snipers are deployed to hit key enemy commanders, or other personnel, with the main intention of creating confusion and inflicting fear on the enemy. An example of such a deployment of snipers was during the 1944 Pacific Campaign in WWII. Their effectiveness is illustrated in the following extract:

*"On the last day of the five-day battle for the atoll of Kawajalien, Coy F 32nd Reg., found themselves pinned down by Sniper fire. The men could not tell where it was coming from. The bullets paralyzed the men. Then they tried to dig deeper into the sand or cover themselves with palm fronds in an attempt to hide. For an hour the Coy 'clung to the earth' just 150 yards short of the end of the atoll. One by one, the soldiers were hit by Sniper fire. Each time, the medics had to risk their lives, crawling forward to the wounded and dragging them back. The 'will to go forward' had vanished. Only the arrival of tank support as a shield from the Sniper fire energized the men to get up and move out towards their objective."*²

Many such encounters took place during the Korean War when the Allied Forces had to deal with Chinese and North Korean snipers. In the Vietnam War, the Americans faced the threat from North Vietnamese Army (NVA) snipers. Incidentally, it was also during this period that the US Armed Forces realised the potential of sniping operations. More formal doctrines were developed on sniping and counter-sniping operations.

*"In Vietnam, the lead element of the American or South Vietnam Army patrol would be shot at by one sniper with the double intention of slowing its advance and drawing it towards his position. The other members of the North Vietnam Army (NVA) sniper cell would be positioned on the patrol's flanks and rear, and would begin to fire on the unit commander, radio operator and heavy weapons man. No more than 5 shots would be fired before the snipers withdrew to new positions. Mines and other booby traps would be positioned in the vicinity to increase the patrol's casualties and allow time for the snipers to withdraw. NVA snipers were instructed to shoot at helicopters coming in to land and if possible, eliminate the Command Post helicopter. Another favored communist ploy involved snipers creeping up behind patrols, picking off the rear man, and then immediately slipping away. This procedure would be repeated every day or so, causing slow attrition and eroding morale."*³

Thus, history shows that when employed optimally, snipers can be a very effective "tool" for soft kills of key enemy commanders; for delaying operations and inflicting psychological fear on the enemy troopers. Snipers are also employed to hunt and seek out enemy snipers. While inflicting confusion on the enemy forces through the effective use of snipers, it is equally important to counter enemy sniper operations to protect one's own forces.

Technology-enhanced Snipers

Although the concept of sniper operation has not differed much through these years, the capabilities of snipers have been greatly enhanced by technology. Snipers today, have a choice of weapon systems and ammunition that can be "tailored" for the mission. Gone are the days when the engagement range of snipers was limited to 600 to 800 meters. Higher-caliber sniper rifles such as the 0.5- inch rifle can achieve a high rate of accuracy beyond 1,500 meters. Advanced technology in the area of day and night weapon optical sights as well as the availability of "designer's" ammunitions, also hone the overall capability of the snipers. Not forgetting the development of better range finders, navigational devices, non-thermal emitting Ghillie suits as well as better secured communication systems.

It is generally envisaged that the battlefield of the future would be mainly in BUAs. Sniper operations in BUA are enhanced with the development of the sniper rifle suppressor. Although reducing the rifle's effective range to about 200 meters, this is usually sufficient in a FIBUA situation. The main advantage of the suppressed mode is that it reduces the muzzle blast and flashes which would confuse the enemy in locating the sniper.

With these advanced systems, the sniper has the potential to be an even more potent force in the army. Nevertheless, over reliance on technical devices have disastrous effects in the battlefield. It is the sniper's well-oiled fundamentals and individual skills that ensure success in operations.

Emphasis of Sniping Operations

It is indeed ironic that although there is general agreement that sniper operations are useful and important in land campaigns, many armies around the world do not have clear doctrines on the use of snipers. The common problem: after "investing" much resources and effort to train marksmen to be snipers, the question of their deployment begins when these highly trained specialists go back to their units. Even the US Marine Corp, which boasts an internationally renowned sniper school, does not have defined roles for its snipers.

*"Snipers are a minute portion of a Marine Battalion's manpower. Marine Snipers have played large and successful combat roles but perhaps due to their outwardly vague missions and small unit structure, Snipers are often considered ineffectual."*⁴

The American and British forces organise their snipers at battalion-level (although the US Ranger units deploy their snipers with the company), but because of their small size of eight to 16 men, they remain a small cog within the battalion structure. The sniper section, considered too small to exist in its own right, is usually tacked on to some other, bigger unit.

In the US Marines, snipers are termed Scout Snipers, reflecting their reconnaissance function. In fact, the Scout Snipers operate as part of the Surveillance and Target Acquisition (STA) Platoon. Similarly, the UK Royal Marines organise their snipers as part of the reconnaissance troop. Although these arrangements make sense as snipers are highly trained in reconnaissance work, sniping suffers as the roles snipers and reconnaissance troops are ultimately very different. A reconnaissance soldier must avoid enemy contact at all costs, but a sniper's prime mission is to engage the enemy. As a consequence, the snipers within the reconnaissance troop tend to find themselves overwhelmed by a larger group whose tactical outlook is to minimise contact.

Snipers in the SAF

In the SAF, snipers are featured in the Infantry Brigade. It has been observed that this structured organisation is less than ideal as this makes the integration of sniper operations in the overall tactical manoeuvres in smaller units difficult. As highlighted, snipers are most effective operating independently or as part of a small unit up to company size. When operating as part of a platoon on patrol or a company in defence, there must be confidence, understanding, coordination and formalised Standard Operating Procedures (SOPs) to achieve both integration and to avoid fratricides. Good integration in the battlefield requires constant practise during peacetime training and evaluation. This is best achieved when snipers are organised within the force structure they are most likely to operate with.

Nevertheless, it is also observed that the Army lacks the tools and methods to evaluate the effectiveness of sniper operations. The combat proficiency of the Army combat units is currently evaluated by the Army Tactics Evaluation Center (ATEC) at battalion-level. This contributes to the lack of emphasis on sniper operations amongst the Army infantry regiments. Few battalion commanders can find the time to integrate sniper operations in the battalion's manoeuvre, as he is not responsible for the combat readiness of this asset in the brigade. To prepare for its proficiency test, the infantry battalion focuses its attention on the sub-units under its charge. The sniper platoon, being a brigade asset, is often left out of the picture. During brigade-level exercises, the snipers from the sniper platoon are deployed mainly to beef up the Brigade Reconnaissance Company (BRC), which is often more "useful" as a source of HUMINT, or they are used as communication re-broadcasting elements.

On the other hand, the absence of effective apparatus in two-sided training involving snipers also contributes to the problem. While the riflemen and even support weapons crew are equipped with MILES, the

snipers have yet to be equipped with any training tool that indicates a "confirmed kill" on pre-designated targets. The current improved version of MILEs relies on the technology of *infrared and prisms*, which is at its infancy in terms of development and has yet to reach a level of accuracy commensurate to sniper operations. Such equipment at present has yet to provide an accurate assessment on the sniper's ability to compensate for ballistic and environmental conditions. Overcoming these variables are vital factors that make the difference between a true sniper and a marksman.

Proposals

It is proposed that the existing Army structure and organisation be reviewed to re-organise the sniper's deployment as a sub-unit in the Infantry Battalions instead of the Brigades. This allows training to be supervised at the battalion-level with close integration and cooperation with the infantry companies. Companies on independent missions can be supported by the battalion snipers for engagement of key enemy targets such as the enemy's command post, machine gun bunkers, observation posts and even sniper positions, during an attack. During a defence or delay operation, snipers may be employed to engage enemy vanguard, commanders, radio operators and elements of the combat service support. To add realism to the company training, battalion snipers may also be deployed to simulate 'enemy snipers'. This will definitely improve the tactical awareness of the infantry soldiers.

Structuring and organising the snipers below battalion-level is not a variable option as it makes the training of snipers less cost-effective. The soldiers after attaining their 'basic' skills as qualified snipers require frequent range shooting practises and tactical field exercises to maintain them at a high level of proficiency. At the battalion-level, the sniper platoon may carry out their routine independent skills training, with the battalion HQ commanders providing the necessary supervision. If the snipers are decentralised to the company-level, the conduct of range practises for such small groups may not be productive. Furthermore, much of the snipers' skills and experience is not only gained from the field, but through research and regular classroom revision lessons on sniping techniques. Knowledge of ammunition characteristics and ballistics effects are equally important for grooming individual skills. Organising these at the battalion-level is definitely more beneficial and cost-effective, as it provides a broader knowledge base compared to the company-level.

To fully explore and evaluate the sniper's deployment, the concept of sniper operations should be incorporated in the ATEC proficiency test. In the absence of an effective MILEs system for the snipers, improvisations such as timely reporting of the designated target may be used. For example, the "enemy" commander or the radioman may wear a recognisable symbol on his helmet. The opposing force's sniper will deploy, spot and report this designated symbol to his commander who in turn reports to the ATEC umpire. To add realism to the exercise, the sniper should fire a blank to simulate that he has engaged the target. If manpower allows, ATEC umpires can accompany the deployed snipers to check their effectiveness of the sniper position. Once verified that the sniper has indeed engaged his designated target, that particular opposing force personnel will be removed from the exercise and deemed ineffective. His proficiency level will be reflected on the sniper's ability to provide timely and accurate reporting without being located or captured. The market currently offers a training device⁵ that can be incorporated on the sniper's rifle optical scope providing real-time transmission of images as viewed by the sniper to his commander. This real-time transmission of video or still images to the control will provide evaluators the feedback and verification if the sniper has indeed "sniped" his target. Primarily designed to support snipers in their shooting training, this device can be easily adapted and should be considered for tactical exercises.

Similar improvisations or devices may be used in two-sided exercises. However, this is more complicated as both forces would be eager to employ snipers for sniping and counter-sniping operations. To facilitate better control, the number of snipers deployed in specified missions may be determined by the exercise control. For example, each unit may be allowed to deploy up to two pairs of snipers. The units have to determine the employment of these snipers to best serve its tactical requirements. Neutral exercise control personnel can then be tasked to follow these snipers to ensure fairplay. Similar methods of identifying symbols may be used.

Incorporating sniping operations in ATEC combat proficiency test exercises as well as two-sided exercises allows for evaluating the operational readiness of the snipers and enhances the overall tactical awareness and consciousness of both the commanders and troops on exercise. Imagine the tactical sense of the battalion commander if he knows he is subjected to sniper attacks? He would probably not want to expose himself too much when checking the enemy defence location over the hill, or when moving in the open.

With more emphasis on the deployment of snipers in the battlefield, unit commanders would ensure the unit's snipers are well trained and operationally ready. More effort should be devoted to integrating sniper operations with the overall scheme of manoeuvres. More emphasis should also be made to ensure that all troops are aware of the risk of sniper attacks in the battlefield, thus giving importance to individual fieldcraft for their own survival.

Conclusion

Snipers are not just marksmen but masters of their fieldcraft and weapons. They are among the best, if not the best soldiers within the unit; they are certainly valuable assets. It is indeed a waste if this asset is not optimally utilised. This is especially so with today's technology in weapon systems and ammunition greatly enhancing the capabilities of snipers. Instead of seeing snipers as a burden during peacetime training due to the difficulty in evaluating them, unit commanders should take the effort to make them relevant. New technology, despite its limitations, is opening up the sniper's tactical outlook. Infantry commanders need to use this invaluable asset to their best advantage. Effort must also be made to review and improve the evaluation methods of the snipers' proficiency at the unit-level. A proven fact in history is that the 'real' battlefield will definitely not be free of snipers. We can only hope that they will have not only the enemy snipers but our very own as well.

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4 *Death from Afar*, Chandler and Chandler, pp 94.

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Systemic Operational Framework - Operational Design for the SAF

by MAJ Lee Wei Cheng

"It is essential to relate what is strategically desirable to what is tactically possible with the forces at your disposal. To this end it is necessary to decide the development of operations before the initial blow is delivered."

-Field Marshal Bernard Montgomery¹

Conflict is common in human affairs. Warfare exists since the dawn of humankind. While some philosophers suggest there were times in human history when cooperation prevailed over conflict², most contemporary experts would accept that some degree of conflict is indeed the usual norm in human affairs.³

Since conflict is common, dealing with the consequences of conflict is a challenge that must be met. Serious conflicts involving the use of violence to achieve results are known as wars. As seen in most Western doctrines, war is part of the 'spectrum of conflict and continuum of operations⁴'. Modern military forces generally sketch war as a broadly Clausewitzian construct; war is by the people and must have a political purpose, and that war is the province of chance, violence and uncertainty.⁵

Management of conflict is seen to be in three different levels: strategic, operational and tactical. Operations are the link between strategy and tactics. Central to an appreciation of the operational level of war and the requirements of operational art is the idea that military actions must serve the demands of strategic policy. Tactical successes in combat are not enough, because tactical successes in themselves do not guarantee victory in war. Most Western military organisations have developed an operational level planning architecture within which national policies are translated into military plans. Operational art, thus, is the skill of translating strategic directions into operational and tactical actions. It is the vital link between the setting of military strategic objectives and the tactical employment of forces in the battlespace to serve the demands of strategic policy.

Unfortunately, an operational framework as such does not aptly address two key issues. First, there is no intellectual approach leading directly to defining the enemy's centers of gravity. In some cases, it may even be difficult to discern what exactly are the centers of gravity. Second, there is no emphasis on probable "topple-events". Topple-events are events, circumstances and interferences - military or non-military - at the operational level that may render a campaign irrelevant or at least, frustrate one's own attempt to achieve operational and strategic objectives. The world has shrunk tremendously due to the proliferation of information and advancement of information technology. With a hastened pace of globalisation, more nations are engaging each other in trade and services. Conflicts in certain parts of the world are no longer the selfish concerns of the belligerent alone. Intervention by the United Nations, regional cooperation organisation or regional powers are becoming a common feature in modern day conflict. Bosnia-Herzegovina, Kosovo and East Timor are cases in point.

Due to the strategic geographical location of Singapore and her neighbouring countries, it is unlikely that the international community will ignore any armed conflicts in the region. In his opening address at the 3rd International Law Seminar, Deputy Prime Minister and Minister for Defence, Dr Tony Tan, mentioned that "over half the world's merchant fleet capacity sails through the Straits of Malacca, Sunda and Lombok, or sail past the Spratly Islands. It is therefore important that the countries in the region observe the freedom of the sea lines of communication and ensure that this movement of people, trade and services is not impeded or disrupted." ⁶ Thus, the operational commander cannot ignore the possibility of external intervention in times of conflict. Such intervention will not only have implications at the operational but

strategic level as well. The failure to provide for an intellectual operational framework to include an analysis of top-level events at the operational level may result in the SAF "winning the battles but losing the war".

A sound operational-level doctrine and its effective application are essential for military success. A stronger focus on tactical and operational doctrines and the recognition of its evolutionary nature are necessary to prepare SAF officers for the challenges of the 21st century. This paper will propose a systemic operational framework that the SAF may utilise in its operational design of military endeavours. The approach is consistent with the operational doctrine of Western military organisations such as the US Joint Command, UK Army and Canadian Forces and builds upon it with new ideas.

On Western Operational Art

"Policy is the guiding intelligence"

- Carl Von Clausewitz⁷

Operational art involves the design, planning and execution of campaigns and major operations in a theatre to achieve operational objectives in accordance with strategic directions.⁸ It requires a clear understanding of the consequences of operational-level decisions, their tactical results, and their impact on strategic aims. In order for the operational commander to formulate and transmit a vision for the accomplishment of the strategic objectives, there must be clear government policy or guidance.

Central to this operational framework is the focus on the enemy's centers of gravity. By definition, the centers of gravity are the characteristics, capabilities, or locations from which the enemy and friendly forces derive their freedom of actions, physical strength and will to fight. The identification of the enemy's centers of gravity, and the single-minded focus on the sequence of actions necessary to expose and neutralise it are the essence of operational art.

The basic tool of the operational commander is the campaign. In order to defeat the enemy, the operational commander is to determine and pursue the sequence of military actions that will most directly serve the strategic objectives. The design of the campaign must rest upon means available and strategic directives or guidance from the strategic level.

Regardless of the clarity of the strategic directive, the operational commander must formulate a vision for the conduct of the campaign. This conceptual vision is the 'soul' of the campaign design. It also serves as the basis for subsequent development of the campaign plan. To formulate this vision, there must be a logical process for understanding, deducing and extracting from the intentions of higher command. This process of mission analysis should also consider what other elements of national power that can be used to support the military commander to achieve overall objective.

The operational commander must have a clear understanding of the criteria or conditions that constitute military success. This is known as the military end-state. Determining the military end-state and ensuring that it accomplishes the strategic objectives are key steps in the conceptual design of the campaign.

The desired military end-states form the foundation for the derivation of campaign operational objectives, centers of gravity, and decisive points leading to the centers of gravity. The operational commander will have to conceptualise the campaign by properly sequencing and synchronising the lines of operations. To this end, maintaining the operational tempo, knowing the timing of the culminating points, and focusing on attacking the enemy's centers of gravity are critical in ensuring that the operational and tactical actions achieve the strategic objectives.

Systemic Operational Framework for the SAF

"The first, the supreme, the most far-reaching act of judgement that the statesmen and commander have to make is to establish....the kind of war they are embarking on; neither mistaking for it, nor trying to turn it into, something that is alien to its nature."

- Carl von Clausewitz⁹

The effectiveness of a good operational tool hinges on the understanding of the nature of warfare and on its applicability in war. Many writers agree that there are fundamental aspects of war that change little over time. The constant arguments include the organised application of violence to achieve political goals and the contest of wills between the belligerents. Yet other writers argue that confining wars to violence used for political purposes misses an important cultural aspect of war, where violence is more the result of social and cultural considerations than any political issues.¹⁰

Since its inception, the SAF is defensive in nature. The use of force will only be a last resort when the nation's survival is threatened and when deterrence and diplomacy fails. To view war either as an application of violence for political purpose or as a tool for cultural or social purpose is insufficient. As nations become more interdependent, there is a need to consider the impending changes in the international system that will fundamentally change the role of politics in war.¹¹

To define an operational framework for the SAF, the utility of the framework needs to be understood. Much akin to a theory, an operational framework is at least three things: a compact description, a clue to explanation, and a tool for better work.¹² To re-define an entirely new framework is not necessary and is a waste of effort. The approach taken is to adapt and make enhancements to the existing operational framework to fulfil the needs and challenges applicable in the geo-political context of the SAF.

Primarily, the proposed operational framework is an effort to promote disciplined yet innovative thinking to the extremely complex phenomenon of war at the operational level. It is not meant to be the panacea to the almost insurmountable problems and challenges faced by the operational-level commander and staff. It is primarily conceptual for the purpose of the campaign design. Flexibility of mind, focus of intent, and adaptability of means are still the very essence necessary for the framework to function. It begins with an assessment of the nature of war, coherent analysis of the nature of warfare, identification of the operational objectives and lines of operation to tackle the objectives, and last but not least, an analysis of the operational tople-events in the theatre of operations. Diagram 1 is a representative diagram of this framework.

This framework is, in general, similar to the operational design currently adopted by the US and NATO forces. However, embedded within is the fundamental mission of the SAF: to secure a swift and decisive victory when necessary. The critical analysis, therefore, embodies the identification of key enemy capabilities and will components to be swiftly defeated with Integrated and Dislocation Warfare. Instead of attempting to determine the operational centers of gravity, which in many cases is either subjective or overwhelming, the approach here maximises on identifying the enemy's key mission components while preserving our own. Conceptually, the difference lies in the belief that there are no easily identifiable centers of gravity at the operational level but rather a system of mission capability components that contributes to the overall military effectiveness. These components, when attacked or disrupted, will certainly affect the operational capabilities and flexibility of the forces. The components are not fixed but rather, it may change from one to another as the situation develops. The aim of focusing such components in accordance to the development of the campaign is to drive operational tempo, have the initiative in hand, and make the enemy's operational plan irrelevant.

To see a conflict through the lens of one's nation alone is dangerous. As outlined earlier, there is a need to appreciate the strategic and operational landscapes outside the nation's own field of view. Whether at the tactical, operational or strategic level, it is important that the military operates with due regard to the

consequences of its actions. Herein lies the second key, aspect of the proposed framework: identification of 'Topleft-events'.

The definition of 'Topleft-events' earlier is open to criticism because of the subjectivity of labels. Essentially these are events or circumstances that will frustrate the operational commander's attempt to achieve strategic objectives. To draw an analogy, 'topple-events' will cause an engine system to sputter and eventually stall enroute. Usually, this occurs due to external injects such as political or military intervention by major powers, introduction of weapons of mass destruction into the theatre, or enemy's military-alliance with sympathetic or like-minded nations in the course of conflicts. 'Topleft- events' can also be seen as strategic or operational surprises that may catch the commander unaware, thus negating his basic operational assumptions. The purpose of identifying such events is to prevent strategic or operational shock that may disrupt efforts at the operational level.

4th Arab-Israeli War: An Illustration

To illustrate the application of the framework in a past campaign, the 4th Arab-Israeli War has been chosen for two main reasons: this campaign is widely known, thus facilitating easy understanding, and secondly, during the outbreak of hostilities, the actors were caught in different stages of strategic and operational positions. There were a series of 'topple-events' that fit into the proposed Systemic Operational Framework. The foci of this operational framework will illustrate the art of operation in its intended context.

Israel's triumph in the 3rd Arab-Israeli War in 1967 might have been cause for some flawed lessons. Following the cessation of hostilities that year, Israel embraced three fundamental assumptions providing the window of opportunity for the Arabs. First, Israel had the attitude that it was militarily and economically superior to its neighbours. Related to this was the view that the Arabs were incapable of coordinated and cooperative political and military action. Thirdly, Israel believed that it had the sympathy and support of the world, particularly the US. 13

The Arabs on the other hand, worked to change the strategic landscape to rebuild the moral and military strength of their forces. At the end of the Third War, Nasar outlined an inter-war campaign with three phases. Following the death of Nasar, Anwar Sadat proposed a limited war with limited objectives to serve political aims to obtain Israeli concessions on land. The military objective was to secure the land in an offensive operation that would break the political stalemate.¹⁴

When the Arabs launched the offensive on the 6 October, the 1350th anniversary of Muhammad's triumphant entry into Mecca and the Israeli Day of Atonement, the Egyptian Commander correctly assessed Israel's key capability and will components as the ability to mobilise, the IAF's superiority, the ability to sustain the long lines of communications and the inability to stand high casualties. From this analysis, the Egyptians began the conflict with 200 Egyptian aircraft striking airfields in the Sinai and communication centres at Bir el Thamada, Bir Gafgafa and Taba. 2,000 airborne troops were lifted 10 miles inland to seize key passes while 2,000 gun artillery barrage provided cover for the 8,000 men crossing the Suez in small dinghies. The SAM 6's and ZSU-23-4's effective air coverage also provided a psychological lift for the ground forces despite scoring no kills. The Egyptian's opening blow was certainly intended to undermine Israel's key capability components.

In conjunction with the Egyptians' effort in targeting the key mission components at the Sinai on the outset, the Syrians simultaneous thrusts at the Golan front accorded the Arabs with operational tempo. But unlike the Egyptians, the Syrians were not actively engaging the key mission components at the Golan front. By fighting piece-meal, the Syrians engaged in attritional tactical battles thereby wasting precious resources. By the 8th, Israel had identified and began attacking the vulnerabilities in the Syrian air defence system. With the SAM umbrella weakened, the IAF was then able to join in the battle against the Syrian armour elements. 15

For Israel, the strategic center of gravity was US support. Understanding this, Anwar Sadat set the conditions for military success at the operational level by attacking the Israeli strategic center of gravity by

threatening US interests in the Middle East. Threatening the oil supply would have had an adverse impact on the US economy. In this case, two American national interests - support of Israel and supply of oil from the Middle East - were mutually exclusive. As a result, the US could not afford to support any Israeli aggression for fear of economic retribution. The absence of US support due to the Arabs' manoeuvre at the strategic level therefore became a 'topple-event' for the Israeli.

Israel's opportunity to re-gain operational and tactical initiative in the war was almost toppled by another event. For the US to demonstrate their indirect support, then US Secretary of State Henry Kissinger made a proposal for a cease-fire on 12 Oct. Having achieved the operational objectives and had Sadat accepted the proposal, the war would have ended with a clear Egyptian victory on the Sinai front. The Arabs would have made a point that the Israelis are not infallible and that the political stalemate would have been broken.16 Sadat would have achieved the strategic objectives at lesser tactical costs.

Conclusion

To be a world-class military organisation, the SAF needs an operational framework to deal with the complexities and challenges of the 21st century. As a knowledge- hungry organisation, the SAF must be robust in both hardware and software. Reviewing the current doctrine on warfare reveals the need to have an operational framework that is consistent with established military organisations yet maintaining a distinctive national flavour. The Systemic Operational Framework, though not entirely new or definitive, provides a useful starting point for further debate and deliberation among the officer ranks.

The prevailing Western operational art is mainly of Clausewitzian construction. Like most democratic nations, the military remains an extension of policy in our national context. However, the definition of the centers of gravity in campaign design is too vague, and even misleading, to provide military officers with sufficient guidance. Rather than attempt to hover around the nomenclature of terms, this framework directs the intellectual approach towards identifying the enemy's systemic mission capability components that will serve well as operational and tactical objectives.

Next, there is a need for an operational construct to take into consideration any possible events that may jeopardise or change the orientation of an operational plan. With the advancement in information technology and more importantly, globalisation of trade and business, it is likely that external intervention will frustrate the effort to achieve the operational aim. The operational framework must thus provide an avenue for an intellectual analysis of 'topple events' to make the operational campaign more robust.

The Systemic Operational Framework attempts to facilitate a thinking and analytical process at the operational level. Largely conceptual, it does not provide a panacea to all the doctrinal problems at the operational level but would form the basic departure point for future enhancement and debates.

Endnotes

1 *The Memoirs of Field Marshall Montgomery*, New York : Singet Books, 1967, p 324.

2 One example is Jean Jacques Rousseau, who used the concept of the 'noble savage' to suggest that in his primitive natural state, man did not pursue war with the intensity and ardour of modern man. Bertrand Russell, *A History of Western Philosophy*. New York: Simon & Schuster, 1972, p 687.

3 John Keegan, *A History of Warfare*. New York: Vintage Books, 1993, p 48; Martin van Creveld, *The Transformation of War* , Toronto: Collier Macmillan Canada, 1991.

4 An example is the Canadian Doctrine, which is based mainly on US and NATO doctrine. National Defence, *Canada's Army: We Stand on Guard for Thee*, Ottawa: DGPA Creative Services, 1998, p 73.

5 Carl von Clausewitz, *On War*, Princeton, New Jersey: Princeton University Press, 1989, trans and edited by Bernard Brodie, Peter Paret and Michael Howard, p 88.

6 The International Law Seminar was jointly organised by MINDEF and the Society for International Law (Singapore) on 28 Aug 99. *Pioneer*, Nov 1999, Issue 265, p 8.

7 Carl von Clausewitz, *On War*, translated and edited by M. Howard and P. Paret, Princeton University Press, 1984, p 607.

8 The operational-level doctrines of most Western Armies such as the US Army, Canadian Army and NATO Land Force are based upon the foundation of three levels of managing conflict: strategic, operational and tactical. At the operational level, Western Operational Art is derived from a variety of sources: government policy, history, military theory, doctrine of allies and nature of current threats. The mentioning of operational art in this paper is in line with CFP(J)5(4) *Joint Doctrine for Canadian Forces Joint and Combined Operations*.

9 Carl von Clausewitz, *On War*, Princeton, New Jersey: Princeton University Press, 1989, trans and edited by Bernard Brodie, Peter Parat and Michael Howard, p 88.

10 See John Keegan, *History of Warfare* for example.

11 See Martin van Creveld, *Transformation of War*.

12 Stephn B. Jones. "A Unified Field Theory of Political Geography," *Annals of the Association of American Geographers*, 1954, p 111, quoted in Commander Joseph A Gattuso, Jr., USN, "Warfare Theory", *The Naval War College Review*, Vol XLIX, No 4, Sequence 356, Autumn, 1996, p 112.

13 Martin van Creveld, *Military Lessons of the Yom Kippur War*, Beverly Hills, London: Sage Publications, 1075, p 2-3.

14 Nadav Safran, *The Embattled Ally*, Cambridge, Massachusetts : Belknap Press, 1978, p 261-279.

15 Frank Aker, *October 1973 : The Arab-Israel War*. Hamden, Connecticut : The Shoe String Press, 1985, p 33.

16 Martin van Creveld, *Military Lessons of the Yom Kippur War*, Beverly Hills, London : Sage Publication, 1975, p 17.

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Understanding the Security Environment in Southeast Asia : A Key to Analysing the Arms Build-up

by CPT Benedict Ang Kheng Leong

Since the end of the Cold War, defence expenditures of Southeast Asian countries have increased steadily. Such increases are dramatised by the import of sophisticated weapons and, in the case of aerial weapon delivery platforms, state-of-the-art fighters. Ironically, these procurements are made at a time when peace was widely expected following the end of Cold War superpower rivalry in the region. The end of the Cold War had precipitated a renewed hope for a stable regional order. Insecurity and instability had plagued the region since WW II. It was only in the post-Cold War era that Southeast Asia was able to seriously contemplate a lasting peace in the region. Thus the rapid build-up of arms seems to run against the grain of this hope. What is even more ironic is that arms procurement is taking place precisely when Vietnam, once ASEAN's most formidable threat, is no longer considered one and has in fact, become a member of ASEAN. It is therefore not surprising that Southeast Asian states may feel suspicious about each other's intentions. ASEAN decision-makers have at times articulated their concern about the rapid arms build-up in Southeast Asia. The increase in defence expenditures coupled with the pursuit of high-technology weapons seems to provide prima facie evidence for the assertion that some kind of arms race exists in the region.

How do we make sense of this phenomenon? Any attempt to explain the military build-up in Southeast Asia would be useless if the region and its unique history are not understood. Indeed, it would be essential to consider the regional context in which the arms build-up is occurring. The first part of this paper will discuss the Southeast Asian context and more importantly the role of ASEAN in defining this context. The second part will examine the extent of inter-state conflicts and how such conflicts have traditionally been managed while examining the trends towards establishing confidence-building mechanisms. The third part of this paper will examine the nature of the weapons procured in order to determine the threat perception of ASEAN states. More importantly, this section seeks to address the question whether there has been a shift in focus in terms of threat perception, especially in post-Cold War Southeast Asia. The fourth part of this paper provides some explanation for the rapid arms build-up. Specifically this part will attempt to identify some of the factors influencing ASEAN member-states to embark on weapons acquisition programmes. Finally, this paper looks at implications of the arms build-up in the region, including the issue of regional instability and insecurity.

ASEAN in the Cold War Era

The security environment of Southeast Asia in the Cold War era was shaped largely by powers and events that were beyond the region's control. To be sure, the security environment was created by the bi-polar, confrontational nature of the international political system. Superpower rivalry had held hostage the foreign policy agenda of all actors in the international political system and Southeast Asia was not spared. The paradigm of the 'centre-peripheral' nature of the Cold War is especially useful in explaining Southeast Asia during this period.

"The United States and the Soviet Union still enjoyed a preponderance of power over all other states, and continued to be locked in tense competition for influence. However, the dangers of nuclear confrontation induced mutual vigilance in the adversarial relationship as a result of which the effectiveness of power was manifested in its restraint. In this regard, areas considered to be of vital importance to the superpowers were stabilised. Wars were restricted to the brush-fires on the peripheries of the respective power blocs as they did not necessarily produce drastic changes in the international system, hence, the relevance of Southeast Asia as an alternative chessboard of superpower conflict."¹

The Second Indochinese War best illustrates the view of Southeast Asia as a chessboard for superpower rivalry. The increasing involvement of the US and the Soviet Union in what began as a nationalist war

between the Vietnamese and the French (First Indochinese War) highlighted the "zero-sum game" mentality of the superpowers. To that extent, the Second Indochinese War was often viewed as a proxy war between the US and the Soviet Union. Up until the end of the Second Indochinese War, non-communist Southeast Asia, as represented by ASEAN was relegated the role of passive participation while deferring to American leadership. To be sure, the foreign policy agenda of ASEAN vis-à-vis communist Southeast Asia was a reflection of the American "containment" policy. The US leadership meant that there was little latitude and autonomy in terms of indigenous input into the process of foreign formulation vis-à-vis the communists. To be fair, ASEAN did have a role in shaping the security environment by adopting a characteristically non-military approach towards the Indochinese imbroglio. The adoption of the approach, however, should not be interpreted as indicative of ASEAN cohesion in terms of regional co-operation. To be sure, ASEAN had little choice but to adopt such a stance. This is to suggest that intra-ASEAN difference in terms of threat perception existed even in the face of the Indochinese threat.² This was especially evident during the Third Indochinese War.³ While pragmatism had forced ASEAN to take the side of the PRC against the Soviet-backed Vietnamese, both Indonesia and Malaysia had reservations about the PRC filling the power vacuum created by American disengagement from the region.⁴ To understand ASEAN's non-military approach to the Indochinese problem, the underlying fundamental motivation of ASEAN has to be considered.

ASEAN was formed in 1967 in the wake of Indonesia's 'Konfrontasi' policy. To a large extent, ASEAN was formed as a platform through which regional stability could be secured. This was to be achieved through a process of discussion, consultation, and most important, conflict management. In other words, ASEAN was formed as a regional forum to manage regional inter-state conflicts. It has to be recognised that Southeast Asia states at that time were still in their formative years. Many of the sources of the inter-state conflicts emanated from domestic political instabilities. The formation of ASEAN represented a consensus among the founding member states to manage their differences in order to concentrate their limited resources so as to establish domestic stability through economic development.⁵

The point to be made is that ASEAN was not formed as a military alliance. This explains its antipathy to a military response vis-à-vis the Cambodian conflict. To be sure, ASEAN shunned away from any multilateral military arrangement.⁶ It was not until 1992 that ASEAN leaders officially recognised the need to address regional security issues.⁷ The Singapore Declaration marked a turning point in intra-ASEAN relations. The Declaration was a manifestation of the fundamental shift in the strategic thinking of ASEAN states.

Post-Cold War ASEAN: Inter-State Conflicts and Conflict Management in Southeast Asia

The end of the Cold War had several immediate implications on ASEAN. The withdrawal of the Vietnamese forces from Cambodia had signalled the end of the communist threat. While the diffused tensions vis-à-vis Vietnam had given hope to better prospects for peace in the region, it ironically heightened the insecurity of the ASEAN states. The insecurity felt was due to the anticipated instability resulting from the changing security environment. The conspicuous drawdown of American forces in the region had demonstrated to Southeast Asia the growing reluctance of the US to commit American military forces to ensure stability in the region. In the face of such uncertainties Southeast Asian states quickly realised the pressing need to establish a security regime that would ensure stability in the region. Southeast Asian states also realised that external powers can no longer be relied upon as a stabilising influence. The realisation of these realities provoked Southeast Asian states to re-examine the role of ASEAN. ASEAN was seen as the most logical and viable platform to address the anticipated emerging security issues. The utility of ASEAN as a conflict management forum was recognised because ASEAN already embraced the principles that were considered fundamental to the establishment of a successful conflict management regime. These principles were articulated and institutionalised in the *Treaty of Amity and Co-operation*.⁸ Essentially, the principles were articulated as "mutual respect for the independence, sovereignty, equality, territorial integrity, and national identity of all nations; the right of every state to lead its national existence free from external interference, subversion or coercion; non-interference in the internal affairs of one another; settlement of differences or disputes by peaceful means; renunciation of the threat or use of force; and effective co-operation among members." At the same time, ASEAN had also established a basis for regional peace, manifested in the forms of ZOPFAN (Zone of Peace, Freedom and Neutrality) and SEANWFZ (Southeast Asia Nuclear-Weapons Free Zone). While the viability of these two concepts may be questioned, what is important to note is that

these two ASEAN concepts constituted an ideal towards which regional peace may be achieved. It was thus not surprising that ASEAN was seen to be the most appropriate forum to discuss the security concerns of member states. At least one other reason can be offered for the choice of ASEAN as a forum to address security issues. Through the framework of the PMC (Post-Ministerial Conference), ASEAN members could control the agenda for discussion. This was especially necessary in the view of the need to include external powers in any discussion on regional security issues. Southeast Asian states would minimise the risk of being marginalised if such discussions were held within the framework of ASEAN.

The Singapore Declaration represented a consensus among ASEAN members that ASEAN needed to play a more pro-active role in establishing regional stability by providing a platform to, at the very least, discuss the security needs and concerns of Southeast Asian states. This was even more pressing in the light of the many existing bilateral territorial disputes that threatened to surface to the top of states' foreign policy agendas (see appendix 1 for a list of existing bilateral territorial disputes). ASEAN had earlier already established the norms with respect to managing intra-ASEAN conflicts in the form of the TAC in 1976. Signatories to the Treaty were obliged to embrace the norm of the non-violent resolution of conflicts. While the TAC served the purpose of establishing a norm with regards to conflict management in Southeast Asia, it was insufficient insofar as it did not provide a formal arrangement in which security concerns could be discussed. It was in the light of this inadequacy that the ASEAN Regional Forum (ARF) was established. The ARF represents an exercise in constructive engagement. Constructive engagement is preventive diplomacy at work and implies that states with differences and conflicts of interests are committed to consultations according to agreed-upon norms and rules. It is thus not surprising that the purposes and principles of the TAC were endorsed at the ARF as a code of conduct for governing regional relations. At the same time, the ARF also represents a conscious attempt at involving external powers to formally participate in security dialogue concerning regional security issues. The spirit of constructive engagement thus extends beyond regional boundaries and this, to a large extent, is in recognition of the critical role that external powers play in shaping the security environment in Southeast Asia. The unprecedented meeting of ASEAN members and its dialogue partners in Singapore in July 1993 represented the first tentative step towards formal dialogue on a multilateral platform.

Yet, the fact that such a multilateral framework was established only at the 'forum' level is telling of the apprehensions that persist in Southeast Asia. ASEAN had been particularly reluctant to proceed along the lines of a CSCE-type approach towards establishing regional stability. These apprehensions point to the divergence in views regarding the regional order in Southeast Asia. Such divergence no doubt reflects the difference in threat perception with respect to the uncertainties created by the changing security environment. Thus the ARF may be seen as the lowest common denominator among ASEAN states. While it is obvious that ASEAN states would like to preserve their autonomy with respect to their arms acquisition programmes, does the reluctance necessarily imply that states are identifying each other as threats and are thus unwilling to be subjected to arms control?

Trends in Arms Procurement and Defence Spending

A survey of recent trends in weapons acquisition suggests a shift in focus towards maritime security issues. Desmond Ball noted that in Southeast Asia, defence forces have been "restructured (sic) from counter-insurgency capabilities"⁹. This point is valid in the light of the military hardware procured in recent years by ASEAN states. Many ASEAN states have embarked on a programme to boost their maritime capabilities. This would suggest that there are growing maritime concerns. There is a distinct focus on the upgrading of the ability to project power beyond immediate coastal vicinities. This reinforces the view that there is an increasing maritime dimension to regional security outlooks.¹⁰

Without a doubt, the emergence of this new dimension is due to the changing security environment as alluded to in the first part of this paper. The insecurity in maritime Southeast Asia took on a visible form with the re-emergence of the Spratlys issue in the immediate post-Cold War era. The insecurity was heightened when the Standing Committee of China's National People's Congress enacted a law in February 1992 on territorial waters, reasserting sovereignty over islands in the East China Sea and South China Sea, as well as the right to take all necessary measures to prevent and stop the so-called harmful passage of foreign vessels through its territorial waters.

The emergence of the Spratly Islands issue in the aftermath of the Cold War highlighted the need to address security concerns on a multilateral level. While a discussion on the Spratlys issue may not be germane to this paper, the implications of the issue are important in understanding the build-up in Southeast Asia. Even though the Spratlys issue is, strictly speaking, a sovereignty issue, its ramifications are wider. Specifically, tensions in the South China Sea have an immediate impact on the economic environment of the region: the Spratlys issue is an economic security concern. The Sea Lines of Communications (SLOC) that are vital to the region are threatened by the conflicting sovereignty claims.

*" The maintenance of open SLOCs is of importance to regional states. Regional states use the SLOCs very intensively as a means of transportation and trade. In fact, use of the SLOCs throughout our region (Southeast Asia) affects not only regional powers but also the international trading community. Closure, for any reason, of the Straits of Malacca and Singapore would severely affect the economies of Japan, Indonesia and Korea, as well as of other states."*¹¹

Rear-Admiral Kwek Siew Jin,

Former Chief of Navy, Republic of Singapore Navy

Besides the security of SLOCs, ASEAN states also share other 'soft' security concerns such as piracy, smuggling and unlicensed fishing. Thus, the emergence of such 'soft' security concerns characterises the new security environment in Southeast Asia. When viewed in this light, the arms build-up in Southeast Asia appears justified. However, the shared threat perception with regards to 'soft' security issues does not imply that 'hard' security concerns do not exist. Specifically, a security dilemma may still exist even in the face of apparent congruence of perceptions with regards to 'soft' threats.

The persistence of conflicting bilateral territorial claims indeed forces ASEAN states to view each other with suspicion. These suspicions are however mitigated by the complex web of bilateral military co-operation woven over the years. A survey of bilateral military exercises gives credence to the view that mutual suspicions are not festering (see appendix 2). The suspicions are further managed by employing the traditional ASEAN habit of downplaying difference while identifying areas of mutual interest.

Determinants of the Southeast Asian Military Build-up

There are many factors that may explain the military build-up in Southeast Asia. These factors may be broadly categorised into two main groupings: interactive and non-interactive factors. Interactive factors relate to a dynamic relationship between states where the actions by one state serve as inputs into the decision-making process by some other state and vice versa. With respect to the arms build-up in Southeast Asia, interactive factors are those that are linked to the desire of the buyer to enhance its capabilities vis-à-vis other states in the region. There are two identifiable factors under this category. First there is growing desire to play "catch up" in the region. The desire to be on parity in military capability terms is no doubt a corollary of the prestige derived from it. A technologically advanced armed forces is commonly perceived as an indicator of the economic and technological strength of a state. The possession of high technology weapon systems and the ability to operate these systems are often perceived as testimony to these strengths. This 'prestige' factor is most evident in the case of Malaysia. Malaysia had often cited the need to be on par with other countries in the region and that Malaysia's modernisation of the armed forces was "in line with what was being done by other countries in the region."¹² The second factor is the need to develop a capability to preserve national sovereignty and territorial integrity. For example, the former Supreme Commander of Thailand's armed forces General Watanachai Wootisiri, cited the protection of natural resources as the main reason for the acquisition of a helicopter carrier. Undoubtedly, territorial disputes are among the most sensitive issues in post-Cold War Southeast Asia. Territorial disputes are by nature inherently dangerous as they not only relate to economic considerations but impinge on the realms of sovereignty and territorial integrity as well. The ramifications of territorial disputes are not limited to interstate relations but have a direct impact on the political fortunes of the incumbent political regimes. As such, these realms are considered "non-negotiable" by states and thus explain the "zero-sum" nature of such disputes. Therefore, the need to maintain a credible military capability is derived at least in part from the

need to maintain an edge over rival claimants. While it is unlikely that Southeast Asian states will go to war to resolve such disputes, these states deem it prudent to maintain a credible force to at least have some "bargaining power".

Non-interactive factors relate to considerations that are independent of the actions of other states. In other words, the element of "action-reaction" is not present in this set of factors. There are at least four non-interactive factors. First, the economic growth of ASEAN states has allowed more of their financial resources to be devoted to upgrading their military capabilities. Acharya noted that the defence budgets of ASEAN states as measured in their national currencies has generally been on the rise. In addition, Ball noted that there is a positive correlation between defence expenditure and economic growth. The second factor is closely related to the first. Up until the 1980s, most of the armed forces in Southeast Asia were technologically backward. It became increasingly difficult and expensive for the armed forces to maintain these weapon systems. In the face of relatively cheaper and newer weapon systems, it became more cost-effective to acquire new weapon systems than to maintain the old ones. While cost is a factor to consider when acquiring new systems, the obsolescence of the old weapon systems also made them increasingly dangerous to use. In many ways, the old weapons were more dangerous to the users than to the enemy. The third non-interactive factor that may explain the arms build-up in Southeast Asia relates to the desire to be more self-reliant. The awareness that external powers are no longer willing to guarantee the stability of the region, as alluded in the earlier part of this paper, provides the impetus to be more self-reliant:

*"The withdrawal of an US military presence....from its Philippines bases....will have an impact on the balance of power in Southeast Asia. The ASEAN states have come to realise that they must develop a degree of self-reliance so as to be able to cope with both their internal and external problems.... Malaysia is strongly committed to the concept of self-reliance and it is precisely for this reason that it has embarked on the current arms purchases."*¹³

The desire for self-reliance has several implications. Self-reliance would mean that states have to develop independent power-projection capability to patrol the vast maritime areas that characterise insular Southeast Asia. This provides a direct explanation for the surge in interest in maritime capabilities noted earlier. Self-reliance would also mean that states would have to possess the necessary military capability to protect their maritime territories and resources. The fourth non-interactive factor relates to supply-side pressures. The end of the Cold War and the attendant reduction in demand for conventional arms by Cold War protagonists led to a large stock of surplus arms. Arms manufacturer world-wide were left in the cold as they desperately sought new markets for their surplus stocks. At the same time, cash-strapped states of the former Soviet Union were looking for quick sales to generate much-needed foreign exchange. These two factors combined to produce "the greatest buyers' market ever". The increased competition between arms manufacturers as a result of the drop in demand meant prices were being driven down. The end of the Cold War also saw Russia and its former east-European allies becoming politically acceptable suppliers of arms. The influx of Russian and East-European arms into the region bears testimony to this fact.

Implications of Arms Build-up in the Region

The arms build-up in post-Cold War Southeast Asia is the result of a host of factors. While most of the determinants of the arms build-up appear to be innocuous, the ramifications of such a build-up may be more ominous. A wanton build-up of military capabilities will inevitably feed the feelings of mistrust already present. The range of outstanding bilateral territorial disputes serves as latent fuel that may be ignited as a result of misunderstandings arising from misinterpretation of intentions. While it is conceivable that no major wars are likely to be fought, it is not entirely inconceivable that skirmishes may arise. Indeed, as the power projection capabilities of states continue to improve, the boundaries of military spheres will also begin to overlap. Without mutual reassurances, the intensity of military contact between rival forces may easily lead to accidental clashes. It is thus vital that the arms build-up takes place in the context of confidence-building. The pursuit of national prestige and military self-reliance must not overtake the pursuit of confidence-building measures. Otherwise, it is inevitable that the arms build-up will become an arms race. Thus, even though the motivations behind the arms build-up may be innocuous, the impact on inter-state relations will depend on the perceptions of other states. Strictly speaking, self-reliance cannot be defined

without considering neighbour forces. There will be a point when the arms build-up of a state will be in relation to other states, and it is precisely this "action-relation" that would cause an arms race.

The ARF presents the best platform yet to address this. The ARF represents the first step towards the establishment of a confidence-building regime. In fact, the ARF itself can be said to be a political confidence-building measure (CBM). By endorsing the principles of the TAC, the ARF has provided at least a bottom-line regarding the behaviour of states towards conflict resolution. However, the problem with political CBMs in general and the ARF in particular is that while states are committed in principle to norms of behaviour, the adherence to these principles is least likely to be believed when it is most needed. Thus, the ARF, and for that matter the TAC, is not sufficient for confidence-building. The commitment to such norms must be demonstrated in concrete terms. In what terms are they to materialise, is precisely what the ARF hopes to be set out. The ARF has inter-alia several concrete measures. These include the publication of defence White Papers and the participation in the UN conventional arms register. In the longer term, the idea of a register is being explored, as well as a multilateral agreement on avoidance of naval incidents. However, it is important to note that strictly speaking, these measures are not CBMs in themselves. These measures are in fact transparency measures and a qualitative distinction has to be made. Political CBMs require trust while transparency measures do not. Political CBMs are meant to prevent the inadvertent war while transparency measures are designed to minimise security dilemma risks. It should also be noted that transparency measures might in fact be counter-productive to arms control. The lack of arms control mechanisms however does not necessarily portend instability nor should it heighten insecurity in Southeast Asia. The purchase of arms may take place without creating instability as long as it takes place within a larger framework of confidence-building.

Conclusion

The demands and challenges of the new security environment in Southeast Asia have provided the impetus for states to acquire the necessary military capability. The military build-up that the region is witnessing may not yet be classified as an arms race. To be sure, there is an evident lack of self-stimulating military rivalry. As identified in this paper, there are non-interactive factors that adequately explain the arms build-up in Southeast Asia. However, given the insecurity of Southeast Asian states in the post-Cold War era, there is a dire need to establish more concrete measures to address this insecurity.

Given the persistence of the proliferation of bilateral territorial disputes, a wanton build-up of arms in the region without adequate CBMs can only lead to disaster. While the ARF represents a step in the right direction, it alone cannot hope to achieve a stable and secure environment. ASEAN member states must demonstrate their commitment to the principles and norms of ASEAN and ARF by adopting more concrete measures. Besides formal frameworks such as the ASEAN-PMC and the ARF, non-governmental organisations (NGOs) are increasingly playing a greater role in contributing to security and stability of the region. NGOs such as the ASEAN Institutes for Strategic Studies (ASEAN-ISIS) and the Council for Security Co-operation in the Asia-Pacific (CSCAP) serve as important fora for the exchange of ideas which have served as useful inputs into the decision-making processes of states. At the same time, NGOs such as the ASEAN Inter-Parliamentary Organisation (ASEAN-IPO) serve as informal platforms in which personal relationships may be cultivated to enhance mutual trust and understanding. It is only with such a comprehensive approach to security co-operation can the regional arms build-up be kept in perspective.

Appendix

1

Conflicting Bilateral Territorial Claims in Southeast Asia*

1. Malaysia - Thailand dispute over their land boundary as well as over the demarcation of maritime boundaries in the Gulf of Thailand;
2. Malaysia - Indonesia dispute over the ownership of Sipadan and Ligitan islands;
3. Malaysia - Singapore dispute over Pedra Branca island;

4. Malaysia - Philippines dispute over Sabah and Sulu Sea;
5. Malaysia - Brunei disputes over Limbang and maritime boundaries in the South China Sea, including Louisa Reef;
6. Thailand - Myanmar dispute over their land boundary;
7. Thailand - Laos dispute over their land boundary;
8. Thailand - Cambodia dispute over their land boundary;
9. Indonesia - Papua New Guinea dispute over their land boundary;
10. Indonesia - Vietnam maritime dispute over Natuna island;
11. China - Brunei dispute over their maritime boundary, including the southern islets in the Spratlys group; and
12. Vietnam - Cambodia conflict over the Puolo Wai and Tang islands.

**Adapted from Bilveer Singh, "The Challenge of the Security Environment in Southeast Asia in the Post-Cold War Era", Australian Journal of International Affairs, Vol.47, Iss. 2, 1993, pp. 273-274*

Appendix 2

Countries Involved	Name of Exercises	Year Started	Comments
Indonesia / Malaysia (Army)	"Kekar Malindo"/ "Tatar Malindo"/ "Kripura Malindo"	1977 1981 1981	Annual Intermittent Intermittent
Indonesia / Malaysia (Air)	"Elang Malindo"	1975	Annual
Indonesia / Malaysia (Navy)	"Malindo Jaya"	1973	Annual (?)
Indonesia / Malaysia (All services)	"Darsasa Malindo"	1982	Twice since 1982
Indonesia / Singapore (Army)	"Safakar Indopura"	1989	Annual
Indonesia / Singapore (Air)	"Elang Indopura"	1980	Annual
Indonesia / Singapore (Navy)	"Englek"	1974	Biennial
Indonesia / Thailand (Air)	"Elang Thainesia"	1981	Annual
Indonesia /	"Sea Garuda"	1975(?)	Intermittent

Thailand (Navy)			
Indonesia / Philippines (Navy)	"Philindo"/ "Corpatphilindo"	1972	Intermittent
Malaysia / Singapore (Army)	"Semangat Bersatu"	1989	Intermittent
Malaysia / Singapore (Navy)	"Malapura"	1984	Annual (Suspended)
Malaysia / Thailand (Air)	"Air Thamal"	1981	Annual
Malaysia / Thailand (Navy)	"Thalay"	1980	Intermittent (?)
Malaysia / Brunei (Navy)	"Hornbill" (and others)	1981 (?)	Intermittent
Singapore / Thailand (Air)	"Sing-Siam)	1981 (?)	Intermittent
Singapore / Thailand (Navy)	"Thai-sing"	1983	Annual
Singapore / Brunei (Navy)	"Pelican"	1979	Annual
Singapore / Brunei (Army)	"Termite"/ "Flaming Arrow"/ "Juggernaut"	1985	Annual
Singapore / Philippines (Army)	"Anoa-Singa"	1993	Annual (?)

Sources: Various sources as quoted in Amitav Acharya, *An Arms race in Post-Cold War Southeast Asia? Prospects for Control*, *Singapore of Southeast Asian Studies*, 1994, pp. 36-37.

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1 Hari Singh, "Prospects for Regional Stability in Southeast Asia in the Post-Cold War Era", *Millennium*, Vol. 22, Iss. 2, 1993, pp. 252-253.

2 For a comprehensive discussion on the evolution of ASEAN and its role in shaping the security environment of Southeast Asia, see Michael Leifer, *ASEAN and the Security of Southeast Asia*, London: Routledge, 1989.

3 The enunciation of the Guam Doctrine and the British 'East of Suez' policy earlier had shaped the security environment of Southeast Asia. This was no doubt a reflection of the structural changes taking place in the international political system. The emergence of the PRC as a third player in superpower rivalry had introduced a new factor in the bi-polar equation. The Sino-Soviet rift and Sino-US *rapprochement* had led to the Vietnamisation of the Second Indochinese War. These changes at the global level once again changed the security environment of Southeast Asia according to the 'centre-peripheral' nature of relations as alluded to earlier.

4 Indonesia for example had an alternative strategic perspective vis-à-vis the role of Vietnam in the security of Southeast Asia. To begin with, Indonesia was particularly sympathetic towards the Vietnamese in view of their shared experiences in terms of nationalistic struggle against colonial rule. This is coupled with the fact that Indonesia viewed the PRC with great apprehension, especially since 1965 when the PRC was suspected of involvement in Gerakan September Tiga Puluh (GESTAPU) or the 30 September Affair. To be sure, the Indonesians had entertained the prospects of cultivating Vietnam as a countervailing power against Chinese influence in the region. See Michael Leifer, *op. cit.*, pp. 91-92.

5 Amitav Acharya, "The Association of Southeast Asian Nations: 'Security Community' or 'Defence Community'?", *PacificAffairs*, vol. 64, no. 2 (summer 1991), p. 4.

6 The prime motivation for this was the general reluctance to commit militarily into an alliance which would reduce the latitude and autonomy of ASEAN states, especially the smaller ones, in their foreign policy making process. Differences in threat perception also made it impossible for military cooperation at a multi-lateral level.

7 ASEAN leaders had agreed at the Singapore summit to hold multilateral discussions on security issues through the frameworks of the ASEAN Post-Ministerial Conference (ASEAN-PMC) and the ASEAN Regional Forum (ARF).

8 The TAC essentially set out a code of conduct for regional relations based on the respect for the sanctity of national sovereignty.

9 Desmond Ball, "Trends in Military Acquisitions: Implications for Security and Prospects for Constraints/Controls" in Mngara and Balakrishnan (eds.), *The Making of a Security Community in the Asia-Pacific*, Proceedings of the 7th Asia-Pacific Roundtable, KL June 6-9, 1993, KL:ISIS, 1994, p. 131.

10 Douglas Ramage, *Security Cooperation in the Asia-Pacific (A Conference Report)*, 2nd Conference on Security Cooperation in Asia-Pacific, Jakarta: Centre for Strategic and International Studies, p. 37.

11 Kwek Siew Jin, "Naval Confidence- and Security-building Measures: A Singaporean Perspective", in Andrew Mack (ed.), *A peaceful Ocean? Maritime Security in the Pacific in the Post-Cold War era*, Canberra: Allen & Unwin, 1993, p. 130.

12 As quoted in in Amitav Acharya, *An Arms Race in Post-Cold War Southeast Asia? Prospects for Control*, Singapore:ISAS, 1994, p. 30.

13 Keith Scott, "Missiles Possibility in Malaysian Plan," *Canberra Times*, as quoted in *ibid.*, p. 32.

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A Knowledge-based SAF : The Paradigm of the SAF for the 21st Century and Beyond

by CPT Tay Leng Hua

"Our young must be made to realise that the kind of Singapore they are familiar with and have come to take for granted, is not a birthright. It is something they have to work at to ensure that the social cohesion, the prosperity and progress we now enjoy as a nation can continue in the future." 1

Mr Lee Yock Suan

Since independence in 1965, Singapore has achieved remarkable success with political stability, social mobility and economic transformation. Young Singaporeans are growing up with many material comforts, well-equipped schools, a safe environment and high expectations. Their aspirations for a good life are continually rising. The question is, how long more and can it be sustained?

Twin Problems: Economics and Security

All societies, whether gathered in tribes, city-states, nation-states or empires, must solve the twin problems of economics and security. In other words, human society must first be able to make a living as well as be able to defend themselves, otherwise, what they have could be taken away from them. No human society can avoid these twin problems. Singapore is no exception: Singapore, being a small nation, is made even more vulnerable in these areas of economics and security compared to the larger nations, especially in the 21st century.

"Our economy is entering a new phase of growth, one driven by knowledge, technology, innovation and regional growth. It is a future which holds tremendous promise for our people if we prepare them well through proper education and training."2

Mr Goh Chok Tong

Towards a Knowledge-based Economy

In the 21st century, the world economy will undergo a paradigm shift, a shift towards a knowledge-based economy. In a knowledge-based economy, the world economy is increasingly knowledge and information driven. Knowledge has become one of the key economic resources and will increasingly be the basis for international competitiveness.

Future economic growth will not be coming so much from large companies employing large numbers of people but increasingly from small start-up companies staffed by small numbers of people but with large ideas. The competitive advantage of nations will shift from possession of extensive natural resources and large populations to possession of skilled, imaginative people who can create wealth through exploiting innovations in science and technology, particularly in the fields of information technology, life-sciences and entertainment.

As stated by RADM (NS) Teo Chee Hean in *The New Workforce - Education and International Talent*, human capital will be the key to the creation of wealth. He spoke of the findings from a recent study that shows that in the new world economy, the decisive factors in wealth creation are human in nature: human ingenuity in creating and harnessing scientific and technological advances; human adaptability in the face of unrelenting change; and the social organisation to fully exploit these talents.

The knowledge economy will be based on intangible assets which will take the form of services and solutions to produce high value products which will contain expensive knowledge but very cheap physical raw materials. The pricing of a product will reflect not the value of the raw material that is used to produce it but the knowledge that is required to create and distribute the product.

Hence, the vitality of a nation's economic health will be sustained by its ability to throw up a constant stream of new high-tech ventures to fill new demands and create new markets. In the next millennium, development of technology entrepreneurship (or technopreneurship for short) is a must for nations to sustain their competitive edge.

*"A knowledge-based economy is sustained by innovation and supported by inputs such as research and development, strong technology culture and solid intellectual property protection."*³

Dr Tony Tan Keng Yam

Knowledge-based economy places a high premium on knowledge and skills. To prepare Singapore to face the new challenges in the 21st century, the government has already prepared and implemented sound policies in its infrastructure (information technology structures, world-class institutions) and environment (policies on education, rewards for creativity, tolerance for risks) so that Singaporeans can be ready to ride ahead and maintain her economic competitive edge in the next century.

*"We could not risk betting our survival by depending on others to defend us. We had instituted National Service, and were building up the Singapore Armed Forces (SAF). But the SAF could never overwhelm an opponent by numbers. It (SAF) would have to fight smart."*⁴

BG (NS) Lee Hsien Loong

A Knowledge-based SAF

Human society cannot avoid the twin problems of economics and security. To encourage foreign investments and an influx of foreign talent to sustain the economic growth and stability in Singapore, there needs to be more than a strong, clean and stable government. A smart and strong SAF is necessary to deter threats that may undermine Singapore's stability in the 21st century.

The future security of Singapore cannot depend only on using new or upgraded hardware (defence technologies) to leverage the software (soldiers). The dependence on defence technology alone to fight a battle may not allow the SAF to have a significant advantage in the battlefield.

The security in the 21st century will demand constant upgrading of the software with new skills and expertise to fully exploit the hardware. Singapore's security will depend on the knowledge and skills of her soldiers (human capital). Thinking soldiers with the right knowledge and skills to leverage the defence technology hardware, will allow SAF to have the significant edge over her enemies. Soldiers must be trained to operate state of the art defence technologies and must know how to use it creatively (value added) to provide SAF the significant edge. These soldiers (operators) behind the defence technological mechanisms are those that can make the difference.

Therefore, to meet the security requirements of the 21st century, the SAF has to work towards the concept of a knowledge-based SAF. Soldiers have to be constantly trained with new or upgraded skills throughout their career to meet their task requirements as well as be instilled with the desire and commitment to defend Singapore.

How Far to a Knowledge-based SAF?

To determine how far the SAF is from achieving the state of a knowledge-based SAF, the Hayes and Wheelwright framework used by the manufacturing sector is adapted for use in this paper.

The Hayes and Wheelwright framework uses a four-stage continuum to determine the position of a manufacturing company in the industry. Each stage is identified by the company's level of manufacturing effectiveness. Stage 1 manufacturing is almost entirely reactive and stage 4 manufacturing is largely proactive. The framework reflects the increasing importance of manufacturing as a company's competitive environment becomes more demanding. Companies that are in or reached stage 4 have a competitive edge over their rivals in their industry.

The same framework can be adapted to reflect the increasing importance of knowledge to the SAF as its security environment becomes more demanding. To determine her position in the security industry, SAF can use the four-stage continuum. Thereafter, the SAF shall determine the necessary steps to propel herself to stage 4. The framework is adapted as follows:

- **Stage 1- Internally Neutral**

In stage 1, soldiers are only taught and trained in basic knowledge and skills by external expertise. Their knowledge and skills are further refined from lessons drawn from histories, past experiences and mistakes made while applying their basic knowledge and skills. Research and developments carried out are minimal and localised. External expertise is engaged to assist in the setting up of strategic management or knowledge systems.

The basic structure of the armed forces may just consist of the army, navy and air force operating autonomously. The coverage of defence is limited to local areas and weapons used for security may be just sufficient to get by. Training is autonomous and limited to local terrain.

- **Stage 2 - Externally Neutral**

To match the standards of the armed forces in the same league, soldiers are sent overseas to leading armed forces to acquire new knowledge (concepts, skills, operations and technology). The new knowledge acquired is modified and adapted to local operations. Investments are also made to acquire modern weapons, defence technologies and strategic management systems. Military institutions are set up and the armed forces is capable of transferring knowledge and skills internally. The scope of research and development is expanded to explore new technologies.

Coverage of defence is no longer restricted to its territorial boundaries. The armed forces structure begins to expand to cater to joint operations. Specialised units are also set up to meet the needs of special operations. Training is no longer confined to local terrain. Joint operations between the various arms and specialised units are conducted regularly. Participation in bilateral and multilateral exercises with foreign forces are common.

- **Stage 3 - Internally Supportive**

At this stage, strategies are formulated to guide the activities of the armed forces. Decisions and investments made will be screened to ensure that they are consistent with the organisation's strategies (for example, macro competencies). The armed forces will be on the lookout for longer term developments and trends that may have a significant effect on its ability to respond to the needs in other parts of the organisation. With the set up of established military institutions, military students exchange programs are held to learn from each other. The research and development unit is capable of designing and building defence mechanisms for local use as well as for exports.

The role of the armed forces includes participation in major peace-keeping operations, humanitarian aid and assistance. The armed forces structure will continue to grow and expand. To keep the soldiers in tune with the latest skills and knowledge, soldiers are sent overseas for long-term attachments with host countries of the leading armed forces.

- **Stage 4 - Externally Supportive**

In this final stage, the armed forces will anticipate the potential of new practices and technologies and seek to acquire expertise in them long before their implications are fully apparent. They will place emphasis on the infrastructure, environment and activities to encourage continual improvement and knowledge creation. Long-range strategic plans are developed such that the new knowledge and skills harvested can play a meaningful role in securing the armed forces strategic objectives.

Based on the framework, the SAF is determined to be in the 3rd stage of the continuum. The SAF is only a stage away from achieving the position that will allow it to have a significant edge.

Moving Towards Stage 4 - A Knowledge-based SAF

*"We must invest in our young. They are our future. We want to equip them to face the future, maximise their potential, shape their attitudes, so that when they grow up, they will take care of Singapore."*⁵

Mr Goh Chok Tong

As rightly said by Prime Minister Goh Chok Tong, the future of Singapore lies in the hands of the generations to come. To become a knowledge-based SAF, the SAF needs to train her human capital to its maximum potential (knowledge and skills) by utilising and complementing it with the infrastructure and environment being or already created for the economic sector to compete in the 21st century.

To move from stage 3 to stage 4, several areas of concern are highlighted: education, information technology, research and development, technopreneurship, skills, mindset change, culture, shortage of talented human capital and the Singapore spirit. The following suggestions are proposed for the SAF:

Education

*"Governments in developed countries all over the world recognise that the ability of their people to continually master new technologies will have a critical impact on their future global competitiveness. These governments know that education is the key."*⁶

RADM (NS) Teo Chee Hean

The society that is open to new learning, develops skills for critical thinking and problem-solving, and invests in educating of the young will remain successful and vibrant, no matter how small its size. Singapore has always invested heavily in developing its human resources.

Education will be decisive in preparing a new workforce to face the challenges which lie ahead. Through education, it can train the mind to think independently and creatively; prepare for a lifetime of continual learning; develop and maintain literacy in a rapidly advancing Information Age; and to form the social glue that will bind Singapore's diversity into a community with a shared purpose.

To thrive in the 21st century, the Singapore government has built a strong education system to ensure that Singaporeans have a good foundation in education. Capable ministers are chosen to lead the education ministry and to set the direction of future education. Schools are being equipped with information

technology structures and networks, good teachers and an excellent training curriculum to produce students with a strong academic grounding. These schools will continue to develop the young into thinking individuals, foster creativity and inculcate in them learning habits to prepare them for the challenges of the knowledge economy.

Strong nations and strong communities will distinguish themselves from the rest by how well their people learn and adapt to change. Learning will not end in the school or even in the university. Much of the knowledge learnt by the young will be obsolete some years after they complete their formal education. In some professions, like Information Technology (IT), obsolescence occurs even faster. The task of education must therefore be to provide the young with the core knowledge and skills, and the habits of learning, that enable them to learn continuously throughout their lives.

The key to achieving a knowledge-based SAF is lifelong learning. Lifelong learning is not a new concept. Individuals must take it upon themselves the responsibility to learn. Learning to learn, and wanting to learn must be the new culture. Learning can be formal or informal.

The culture of lifelong learning can be initiated by the SAF through campaigns to raise the awareness of lifelong learning among the soldiers. The SAF can encourage and help soldiers by creating a learning environment and by making the best learning and re-skilling opportunities available to them throughout their working lives.

The SAF can co-ordinate with local universities to conduct enrichment courses. Some subjects should include 'Creative Thinking', 'Operation Research' and Management of Information Technology and related subjects. To encourage soldiers to enrol for these courses, they should be given time off for enrolling in these courses. Fees could be subsidised and there need not be any contractual obligations. These courses would enrich the soldier and benefit the SAF. From the macro perspective, most of these soldiers would be working in Singapore when they leave the SAF. The knowledge and skills learnt from these courses will eventually benefit Singapore as the former soldiers can contribute even more to the economy.

Soldiers must learn to think beyond the boundaries of their physical surroundings - beyond their home, workplace, community, country, region and the wider world. Soldiers must also learn to think beyond the obvious, think creatively, search for new knowledge and come up with new ideas, tactics or solutions against future threats.

Capitalising on Information Technology (IT)

*"The key driving force in a knowledge-based economy is IT, which enables people, activities and industries in many countries and locations to interact in real time through the Internet, PCs, mobile communications and electronic commerce."*⁷

Dr Tony Tan Keng Yam

IT will increasingly permeate the society, be it at work, in the home, or in public places. With the convergence of computer, media and telecommunication technologies, an enormous amount of information will be made available and accessible at the touch of a button. As such, IT holds great promise for learning and teaching. It opens up unlimited possibilities. It will play a key role in empowering individuals to become better learners by providing access to rich information sources and presenting information in clear and innovative ways.

Singapore is committed to transforming itself in the next decade into an intelligent island where the whole island is connected by IT, providing Singaporeans access to rich information sources both locally and internationally. Singapore is also a centre for the development and exchange of ideas, information and Singaporeans are highly competent in English. Therefore, capitalising on IT for the competitive advantage is

particularly suitable for Singapore which has no natural resources, and which must rely solely on the ingenuity, creativity and hard work of Singaporeans.

Mastering technology and harnessing it for widespread and comprehensive use is not an easy task. More so when technology is progressing and changing rapidly. Soldiers must be conversant with the use of IT in their everyday lives and they must be comfortable with new technologies and be able to exploit these new technologies to venture beyond their current boundaries and open up new frontiers of knowledge (knowledge creation). The SAF must continue to send her soldiers for IT courses to keep them abreast in the field.

Advances in IT inevitably bring change. The SAF can set up a pool of professionals to manage this change and apply creative teaching methods to allow the soldiers to become better learners. As professionals in the front line of contact with the soldiers, these professionals need to develop a better understanding of what the new technology can offer and how best to employ it for maximum effectiveness in the SAF.

Research and Development

*"A knowledge-based economy is sustained by innovation and supported by inputs such as research and development, strong technology culture and solid intellectual property protection."*⁸

Dr Tony Tan Keng Yam

Research and development (R&D) plays a crucial role in the development of Singapore's security. As the SAF progresses to the next stage, it will need to rely more on innovation-driven growth and the importance of R&D will increase even further. In this next phase of the development, the SAF cannot depend entirely on imported technologies. The SAF will need to develop indigenous expertise and capabilities that can help it better assimilate imported technologies, as well as gain an edge in the security arena. A recent example is the SAF SAR21.

Besides creating a strong technology culture to foster innovation from the R&D, SAF must set challenging goals (create alliances or joint R&D projects, have a training program for R&D manpower, strict licensing and technology transfer policies) for her own research institutes and centres as well. To protect the intellectual property rights, the SAF must have policies governing these rights. This is not only to protect the interest of those who have spent much time on their innovations but more for security reasons.

The SAF can also work together with the National Science and Technology Board (NSTB) and benchmark the institutes and centres with other institutions across the world. This will enable the SAF to learn from the well-established centres and reach world-class standards.

Technopreneurship

Singapore has the basic ingredients for technopreneurship to take root. Her population is well educated, with a strong foundation in science and engineering. Singaporeans are generally technology-savvy and willing to accept new technological innovations. The society is open, cosmopolitan and plugged to the world.

To encourage technopreneurship to benefit the knowledge-based SAF, corporations with unique corporate characteristics favouring innovation can be set up. These corporate characteristics should include a culture promoting creativity, entrepreneurship, and enthusiasm for change. Its corporate policies can reward and motivate technopreneurs with generous stock options. It also needs to have an environment that encourages risk-taking and a tolerance for failure.

Academics are usually at the fore-front of advanced technology. Strategic alliances with the local or foreign universities may yield technological breakthroughs. The SAF can also ride on the government incentives by setting R&D and high-tech activities companies at the designated Science Hub in Buona Vista. The Science Hub will provide an environment where business interactions, technology exchanges and networking can

flourish to provide a breeding ground for innovation and technopreneurship which will eventually benefit the SAF.

Knowledge versus Skills

Knowledge by itself is insufficient. Soldiers must have skills (technical, human relationship, communication skills). Not all soldiers are academically inclined but almost all have qualities and abilities which can be developed to benefit the SAF and themselves.

Soldiers of the knowledge-based SAF must have good, sound knowledge as well as manual dexterity and other talents. The SAF must identify and develop all such knowledge and skills in the soldiers to their maximum potential. For example, the SAF can continue to send its soldiers for operations (peace keeping missions, peace observation missions), which will enable the soldiers to practice and learn new skills that may be applicable to the SAF.

Changing the Mindset

People are resistant to change. The PS21 initiative by the government seeks to usher in a public service that is constantly on the lookout for improvements, looking for better ways to work. It aspires to cultivate among civil servants an attitude to be the best, provide service with courtesy, efficiency and integrity, and be forward-looking and resourceful. It is a programme that will challenge officers to change their mindset and be more flexible and nimble in their thinking.

A knowledge-based SAF requires soldiers to be proactive and adept at applying abstract ideas to problems. They have to be constantly looking for improved and better ways of working in the SAF. They must discard the mindset that their jobs are permanent. They must be prepared for change by having a broad-based foundation of knowledge and skills. The SAF can initiate a similar program (SAF 21) to complement this effort by making the soldiers aware of the changing environment and the need to be proactive and ready for change.

Culture

*"Often times it is culture which makes the difference between success and failure. Thus, to prepare for the next century, we must give emphasis to both knowledge and culture."*⁹

BG (NS) George Yeo

Singapore is a multi-racial country and its people do not share a common cultural heritage. Yet Singaporeans have lived harmoniously for more than 30 years since independence because they recognise their diversity and the need to live in harmony. Many countries with a multi-ethnic population and a longer history have broken up because of ethnic conflicts, for example, Yugoslavia.

To achieve success in a knowledge-based SAF, there should be no preference or bias when dealing with soldiers from different cultures. The SAF must continue to take the initiative to ensure that the interests of all ethnic groups are looked after and protected. There must be equal opportunities for lifelong learning of knowledge and skills, regardless of race.

Shortage of Talented Human Capital

The economy and security problems are not mutually exclusive as both requires the same resource, human capital. With a population of more than 3 million, the human capital required to fill either the economic or security sectors are limited. Furthermore, there is a greater desire to work in the economic sector either locally or overseas to improve their living standard among the more talented people. As highlighted in *The*

New Workforce - Education and International Talent, the society that succeeds is the one that proves to be most able to cultivate its own human resources, draw the best talents from around the globe, and direct them towards the pursuit of economic progress.

Despite the introduction of the SAVER scheme, the SAF is bound to lose some of its talented soldiers with the improved economic outlook and the attractive terms of employment in the private sector. Hence, the issue of retaining talented human capital will always be a challenge for the SAF.

The SAF being dominantly male needs to consider harnessing the potential in its female citizens. With the high standards of education in Singapore it would be prudent to recruit women as soldiers for their mental power and skills to provide creative solutions to problems encountered.

Singapore Spirit

The post-independence generation of Singaporeans is coming of age. Those born after 1965 already form nearly half of the population (47 percent). If the pre-independence generation is defined as those who in 1965, knew and understood the meaning of independence, then the pre-independence generation of Singaporeans is a minority. Singaporeans who were aged 15 or above in 1965 now form only a quarter of the population.

Many younger Singaporeans, know little of their history - how Singapore became an independent nation, how it triumphed against the odds to become the peaceful and prosperous Singapore of today. This ignorance will hinder the nation's effort to develop a shared sense of nationhood and its security.

Efforts by the various government ministries (Ministry of Education, Ministry of Information and the Arts) to educate the post-independence generation through National Education would only educate them on Singapore's fight for independence. For this generation to defend Singapore, there must be a strong sense of loyalty and commitment.

A new area of concern that may arise is the prospect of Singapore becoming a cosmopolitan city with the influx of foreign talents. Cross-cultural marriages between the post-independence generation and the foreign talents is likely to increase. This category of parents are likely to bear their children overseas. Current policies allow for children born overseas to choose their citizenship when they come of age. There is also the risk that some may choose to give up their Singaporean citizenship, hence limiting the talent pool of Singaporeans to serve the SAF.

Soldiers may be very knowledgeable, creative and well trained with skills but without loyalty and commitment, what good is a knowledge-based SAF? For soldiers to be instilled with loyalty, commitment and the will to defend Singapore, they must be taught National Education and made to realise that each one has a vested interest in Singapore. They must build a sense of identity as Singaporeans regardless of their race, language or religion. United, they will be able to do accomplish the necessary to sustain the country from both the economic and security standpoints.

Conclusion

So how much further can the aspirations of young Singaporeans for a good life be sustained? This paper presented the twin problems of economics and security that Singapore will face in the 21st century and how the government has mitigated the economic problem by steering the nation towards a knowledge-based economy.

The SAF is responsible for the security of Singapore. By harnessing and capitalising on the infrastructure and environment built by the government to educate and prepare Singaporeans for the knowledge-based economy, the concept of a knowledge-based SAF is developed. With a knowledge-based SAF, the security of Singapore in the 21st century and beyond can be well sustained.

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Operation Photo - The British Army, Internal Security and the 1956 Singapore Riots

by LTA (NS) Toh Boon Ho

In October 1956, a major milestone in Singapore's history took place when Communist-instigated riots engulfed the whole of Singapore. The situation was deemed serious enough to call out troops to quell the civil disturbances. The subsequent military operation that quelled the riots constituted a textbook example of how military forces should be employed in aid of the civil power.

This paper will review British military planning for internal security operations in the local context by examining the execution of Operation Photo, when troops were called out to aid the civil power to restore law and order. The delicate handling of civil-military relations, excellent scenario and contingency planning, initiative and innovation at all levels of command, small-unit leadership and the effective employment of technology will be assessed as factors contributing to the success of Operation Photo.

Imperial Policing

Britain's long history and experience with empire-building and maintaining her far-flung colonies created the impetus for her military forces to hone the necessity of imperial policing into a highly-skilled art. In fact, army operational manuals clearly understood and explicated the role and use of military forces to quell civil disturbances. The following extract from Pamphlet WO (War Office) Code No 8439 - *Imperial Policing and Duties in Aid of the Civil Power* highlight the important role of military forces in internal security:

British armed forces may be called upon from time to time to carry out operations for the maintenance or restoration of internal peace in British colonial dependencies or in an occupied country.

The sole object of military intervention in civil disputes, or in dealing with general unrest or even widespread insurrection and violence, is the restoration of law and order by military means when other methods have failed, or appear certain to fail.¹

Thus, British troops were trained and expected to deal with civil disturbances throughout the empire.

Historical Context

In the April 1955 elections held under the new Rendel Constitution 2, The Labour Front (LF), an anti-colonial, moderate left-wing political party led by David Marshall, won without a clear majority.³ In the highly charged political atmosphere of the time,⁴ much was expected from the Marshall administration. Marshall's administration started off badly when it was faced with the communist-instigated Hock Lee bus riots and civil disorders throughout May and June 1955. Despite the British governor's offer to the newly installed Marshall administration to call out troops to restore order, it was refused. Marshall feared that calling out British troops would irreparably damage his political credentials as an anti-colonial nationalist.

Contingency Planning

Fearing a repeat of widespread civil disorder in an increasingly volatile political situation, the British Defence Co-ordination Committee, Far East [BDCC(FE)]⁵ in consultation with the Governor made an assessment of the troop levels necessary to impose order should widespread civil disorder recur. Depending on the loyalty of the predominately Malay police force and the nature of the violence which could take on a racial character, the worst case scenario envisaged reinforcement of the Singapore garrison with up to two infantry brigades

and two armoured car squadrons. At the minimum, one infantry brigade and one armoured car squadron was required. These reinforcements had to be drawn from troops in Malaya and the UK.⁶ The net result of these contingency plans was the enactment of a secret plan to reinforce Singapore from the UK to handle a serious deterioration in internal security. These contingency reinforcement plans came to be known as *Operations Hammond and Maximilian*.

In January 1956, the Chiefs of Staff (COS) agreed to reinforce Singapore with one infantry battalion from Hong Kong should a serious deterioration in Singapore's internal security occur.⁷ This was no coincidence as Marshall was gearing up for important constitutional talks in London scheduled for April 1956. Marshall led an all-party delegation to London to seek a new Constitution granting independence to Singapore while allowing Britain to retain military bases and control over Singapore's external affairs. Marshall upped the stakes further when he publicly stated that he would resign should he fail to gain independence for Singapore.

Up to March 1956, an ad hoc military plan to utilise non-essential combat units to aid the civil power in internal security disturbances was in place.⁸ However, in the run-up to the constitutional talks of April-May 1956, these improvised arrangements were deemed inadequate to cope with widespread internal disorders, which the British anticipated would arise from a failure or partial failure in the constitutional talks. The risk of the constitutional talks breaking down in failure and Marshall resigning his ministry was very real. In fact, the Joint Intelligence Committee, Far East [JIC (FE)] assessed that failure at the talks would probably "lead to a wave of industrial unrest and widespread rioting accompanied by acts of violence. Such unrest would seriously impede the efficient operation of military installations and would require the deployment of large forces."⁹

The potential seriousness of a severe deterioration in Singapore's internal security following the failure of the ongoing constitutional talks in London in April-May 1956 prompted the BDCC(FE) to request additional reinforcements from UK. This was rapidly approved by the COS in London, authorising the despatch of 500 technicians by airlift within seven days' notice to cope with an anticipated general strike paralysing all public services should the constitutional talks break down. In addition, but on a reluctant note, the COS would, if it proved absolutely necessary, despatch two regiments of artillery with 1,500 men equipped for an internal security role to follow-up the airlift via sea-lift in an aircraft carrier. This reinforcement would take four weeks to complete upon the receipt of firm orders.¹⁰ Thus, *Operations Hammond and Maximilian* were detailed and set in place in full expectation of a potential breakdown in the constitutional talks.

Genesis of Operation Photo

Concurrently, British military planners in Singapore devised *Operation Photo* as a comprehensively revised plan to deal with any widespread deterioration in Singapore's internal security situation. The term *Photo* was chosen as a pun on FOTO - Failure of Talks Operation.¹¹ Military units attached under *Operation Photo* were placed on standby during the April-May constitutional talks.¹² The essence of *Operation Photo* was the pre-positioning of troops "at key positions at an early stage during disorders so that they might assist the Police to maintain law and order before the situation had got out of hand".¹³ This constituted Phase I of *Operation Photo*.¹⁴ The crucial difference of *Operation Photo* from other previous internal security plans was the employment of "troops to *prevent* disorders rather than to wait until the Police had lost control"¹⁵ It was hoped that the mere presence of heavily-armed troops would deter serious outbreaks of violence. Should this deterrence have failed, troops would then have been deployed to set up pre-determined road blocks controlling all access to the city centre under phase II. The aim was to impede the movement of crowds and prevent rioters from forming big, uncontrollable mobs. In effect, the plan aimed at seizing the initiative to pre-empt the development of a potentially dangerous situation, which with the additional involvement of Royal Air force's (RAF) air and ground units would limit casualties and damage to the minimum.¹⁶

Crucial to the success of *Operation Photo* was the mobilisation of troops with at least 12 hours prior warning for participation in internal security duties. The minimum troop requirements envisaged for the deployment was at least three squadrons of armoured cars and three battalions of infantry.¹⁷ If necessary,

reinforcements amounting to two squadrons of armoured cars and five infantry battalions on counter-terrorist operations were available from Malaya.¹⁸

Meanwhile in London, talks broke down over the question of control over internal security.¹⁹ The British reckoned that Singapore was not ready, nor capable of independence. After the failure of the constitutional talks, Marshall resigned on 7 June 1956, fulfilling his public pledge to resign should he fail to get independence. The fear of a major civil disorder which was expected, following the failure of the constitutional talks, did not materialise.²⁰ However, the extensive planning for such an eventuality set the stage for the success of military forces in quelling the subsequent October Riots by acting as an effective rehearsal for both military commanders and soldiers tasked with secondary internal security duties.

A New Government: A New Plan

On 8 June 1956, Lim Yew Hock took over as Chief Minister. To improve his chances at the next round of constitutional talks, Lim undertook an anti-subversion programme which suppressed suspected CUF organisations and individuals. These actions culminated in a tense showdown with defiant Chinese Middle School students who barricaded themselves in their schools in protest. On 24 October, the Government issued an ultimatum to the demonstrating students to vacate their schools by 2000 hours on 25 October or face police action to forcibly clear the schools.²¹

In the meantime, the resident British infantry battalion, 1st Queen's Royal Regiment, on half-strength since its other two companies were on counter-insurgency operations in Johor, was activated on 12 hours' notice for internal security duties under the initiative of the GHQ, FARELF.

Operational Expediency vs Politics

Efforts to issue similar warning orders to other infantry battalions were thwarted by political indecision. This indecision resulted from Lim Yew Hock's concern "for political reasons, to avoid calling in the Army at all costs. It was feared that the degree of preparation required for 12 hours' notice might be seen by the population."²² The Commissioner of Police, N G Morris, informed the General Officer Commanding (GOC), Singapore Base District, that "for certain reasons it was essential that no indication of even the most unobtrusive military preparations should be either seen or surmised by the Public".²³ It can be deduced that the Labour Front Government was seeking actively to deny the leftwing opposition a public relations windfall. The employment of British military units in any way would only legitimise leftwing claims of an impending crackdown on opposition elements. The explicit use of British troops against defenceless students and their fellow worker sympathisers would only affirm leftwing accusations of the government as an irrefutable "colonial stooge" and in effect, "colonial running dogs". In this manner, the government would have lost the initiative of winning the peoples' hearts and minds to the leftwing opposition. Thus, the political decision to freeze the issuing of warning orders to participating military units created impediments which could have severely hampered the speed in deploying the troops when they were eventually activated. The ROMA was of the opinion that:

*The government seems to have been confident that the parents would succeed in getting their Communist-indoctrinated children out of the schools when adequate police protection was ready at hand. If this were the case, they would be able to avoid large scale disturbances.*²⁴

Despite hopes for a peaceful resolution to the student sit-in protest, attacks against the police took place outside the Chinese High School and Chung Cheng High School *before* the police executed the ultimatum at 2000 hours.²⁵ In fact, the schools were not cleared until first light on the 26 October, which was the plan all along.²⁶ As of 25 October, the only military forces available for internal security duties were the training squadron of the armoured car regiment, 1st King's Dragoon Guards, "X" and "Y" battalions, the HQ and two companies of the 1st Queen's Royal Regiment, 200 Provost Company, Royal Military Police, 18 Independent Infantry Brigade Signal Squadron and three squadrons of RAF ground personnel.²⁷

Operational Readiness

As it were, the military authorities in Singapore were literally scraping the bottom of the barrel to spare troops for internal security duties, in addition to their already heavy commitments of conventional military duties and counter-insurgency operations up-country in Malaya. Thus, the eruption of riots from 25 October onwards that grew in intensity threatened to overwhelm the over-stretched police forces. This necessitated the execution of Operation Photo. However, with scarce manpower available in Singapore, GHQ, FARELF was forced to seek reinforcements from Malaya Command to cope with the riots. Swift reinforcement by units from up-country which were incidentally involved in active counter-insurgency operations in areas as diverse and far away as Johore, Negri Sembilan and the Cameron Highlands proved difficult but the involved units were able to accomplish the reinforcement plan in record time. This was a significant achievement, especially when the response time was lengthened by the political decision not to issue warning orders to military units in Singapore and Malaya for possible internal security duties. In spite of this handicap, when the call for activation was made, most military units were in Singapore within 14 hours of activation. The longest response time was 44 hours, involving the 6th Queen Elizabeth's Own Gurkha Rifles, which was only activated in the late morning of 26 October and was incidentally, the furthest away at 470 miles in the Cameron Highlands.²⁸ By the conclusion of the riots on 2 November, an infantry brigade headquarters, six infantry battalions and two armoured car squadrons had been withdrawn from active military operations in Malaya to cope with the riots in Singapore. In all, 30 percent of all British army forces in Malaya and Singapore had to be utilised to quell the riots.²⁹

How was it possible, given the kind of political constraints that the British military forces were operating under, to achieve such a rapid response when called upon to aid the civil power? First, sound contingency planning had established precise command and control structures and the rules of engagement that would enable British military commanders to execute their internal security roles. Furthermore, the resident military forces were trained and equipped for internal security duties. Internal security stores and equipment like military vehicles fitted with wire-mesh were pre-dumped within Singapore for immediate issue to Malaya-based units on counter-insurgency operations in the event of activation for internal security operations.³⁰ What these measures reveal is a high state of operational and logistic readiness among British military units. Otherwise, it would be difficult to extricate scattered battalions operating in the jungle for concentration in Singapore for internal security operations at short notice.

Command and Control

A key feature of *Operation Photo* was the command and control arrangements involving the police and military. The key leaders of both the police and military were co-located in a joint headquarters at Pearl's Hill to co-ordinate the internal security operation. In most situations, when the military is activated to assume internal security duties, the military commander would usually assume full command over the operation, including direct control over the police forces. In other words, soldiers would be in the lead while the police would play a secondary role. In the case of *Operation Photo*, this command arrangement was not utilised. While the GOC was authorised by the Governor to assume full responsibility, the police continued to receive orders from the Commissioner of Police, who remained independent of the GOC. This complicated chain of command may seem unsound in retrospect. However, the operation of joint command, co-location and close liaison between the police and the military worked well through the two dual separate command chains.³¹

At the same time, a conscious effort was made to ensure that military sub-units would support the police, rather than the reverse. Military sub-units acted on the advice of an accompanying policeman. Clearly, civilian authority was maintained throughout the operation. Order was to be re-established, but at a politically acceptable cost, with minimal casualties. This was important to prevent the excessive use of force by military units against unarmed mobs. The military's role was to assist the outnumbered police in restoring civil order by mounting curfew patrols and manning the roadblocks ringing the city. The exercise of restraint was critical in defusing what was already a tense situation.³²

Similarly, command and control was well-exercised through radio communications. The police were equipped with radio cars while the military units had their establishment of signal sets. In this way, real-time information was transmitted and communication maintained between the headquarters and the ground units. Commanders were therefore able to appraise the situation at all times by maintaining a tight grip on developments.

Initiative and Improvisation

At the strategic and operational level, sound contingency planning and joint operations helped lay the foundation for a successful internal security operation. The practice of initiative permeated all levels of command. As mentioned earlier, the GOC had discreetly activated the resident British battalion in Singapore on 12 hours notice for possible internal security duties even before the ultimatum was breached on 25 October. His judgement was well-served when the riots took place later that night.

At the tactical level, small-unit leadership was crucial in neutralising the riots. The nature of internal security work placed a premium on small-unit leadership. In an urban setting, narrow alleys and frontages constrain the deployment size of security forces. Generally, security forces did not operate beyond platoon size. Thus, junior commanders had to be well-drilled and trained in both the procedures and rules of engagement for handling rioters.³³

Improvisation and initiative were displayed when roof-top patrols were introduced and deployed on rooftops overlooking strategic junctions within the city centre from the second day of rioting. These rooftop patrols, consisting of a section of soldiers led by a section commander and taking orders from a police NCO, were armed with dye grenades, tear gas and coloured flags to signal to RAF helicopters which flew over the city observing and reporting on the movement of the rioting mobs. When crowds grew to a dangerous size, the rooftop patrols would signal the helicopters with their coloured flags which would then swoop down to drop tear gas on the mobs while directing police riot squads on the ground through radio to the spot to break up the crowds. This was an important tactical improvisation which was never reflected in the original plan.³⁴ Initiative and quick-thinking are premium assets during crisis situations which must be imbued at all levels of command.

Use of Technology

Operation Photo marked the first time when helicopters were used in an internal security role. Equipped with radios and tear gas grenades with the ability to cover a wide area, the helicopters served as effective multipliers in negating the numerical inferiority of the security forces when pitted against numerically superior mobs. Similarly, the helicopters served as crucial information as well as command and control platforms by directing riot squads on the ground to areas of developing tension.³⁵ In this way, the security forces utilised information as force multipliers to economise their effort and inferior numbers.

The end result of these inter-related factors was a final death toll of 13 deaths, of which 12 were inflicted by security forces. In total, 761 rounds were fired on 114 occasions. Military personnel fired just 14 rounds and were not responsible for any deaths. The police largely accounted for the majority of rounds fired and subsequent deaths among the rioters. What this clearly indicated was the great restraint exercised by the participating military units.³⁶ It was clearly a civil disturbance in which the police took the lead. Strong support was rendered by the military which was deliberately kept under strict civilian control and direction while exercising great restraint.

Conclusion

A pertinent question to ask then is, so what? Why embark on this study? After all, the SAF today is a full-fledged and well-equipped armed force that is fully capable of neutralising any external security threat. There is no major role for it in internal security, which should rightfully be the responsibility of the police and paramilitary forces. But picture this: Lines of heavily-armed soldiers, clearly irritated by stone-throwing and

petrol-bomb hurling students and workers, start pouring automatic fire indiscriminately into the dense mobs of unarmed rioters and demonstrators. Several people fall to the ground and panic ensues as the rioters run for their lives and leave behind the dead and wounded. Amidst the bloodletting and carnage, the soldiers charge into the scattering crowd and begin their arrests, clubbing and kicking their quarry along the way. This is no exercise scenario but real-life drama unfolding on our television sets. From Thailand's "Black May" in 1992 to the dramatic events taking place in Jakarta since May 1998, military forces have been actively employed to augment, if not take over, the role of suppressing civil disturbances from the police. This role, which constitutes military assistance in aid of the civil power, is arguably every military commander's worst nightmare. The primary role of military forces is to equip and train to fight conventional wars against an external military threat. Yet, a key secondary role of military forces is to ensure regime maintenance and the restoration of law and order. When large-scale civil disturbances occur and civil order breaks down with the police clearly unable to cope, the military is summoned from barracks to assist in the restoration of public order. This study has shown that this scenario is not uncommon in Singapore's history. The politically turbulent 1950s and 1960s necessitated the calling out of troops to cope with large-scale riots ranging from the 1950 Maria Hertogh Riots to the massive security operation put in place to curtail the spill-over effects of the 13 May 1969 Riots in Malaysia. In fact, the SAF hails its origins from the birth of 1 SIR in 1957, which was primarily set up as an internal security outfit.³⁷ Military forces must therefore be schooled and trained to handle the delicate nature of internal security work. Otherwise, the tendency of military forces to resort to excessive use of force made evident in Bangkok and Jakarta could well worsen the situation and entail a high political cost for the political and military leadership.

With the end of the Cold War, conflicts have taken on an internal dimension, with states ranging from Somalia and Rwanda to Afghanistan and the former Yugoslavia suffering from implosion as the centrifugal forces of ethnicity and religion tear away at the bonds of national unity. Internal strife, thus, constitutes a clear and present danger to regime maintenance. In the light of such wide-ranging dangers, especially when Singapore's social fabric is marked by a multi-ethnic and religiously diverse society, internal security is something we cannot be complacent about. When things do go badly wrong, the military has to be called in to aid the civil power restore order. This is a task which military leaders must be prepared to undertake when called to do so. Yet, given the delicate nature of restoring law and order in an emotionally and politically-charged atmosphere, military forces must be well-trained to handle such duties. In particular, civil-military relations with respect to command and control procedures, as well as strict rules of engagement, must be clearly laid out for the military to successfully undertake internal security work. Clausewitz's dictum that military means must be subjected to political aims is particularly relevant in internal security operations. All military commanders, from the most senior general to the most junior section commander, must realise and understand this. Operational expediency must sometimes be sacrificed to meet political aims. Yet, this handicap can be reduced through sound contingency planning and high operational readiness. The use of technology, as the case of radio communications and the innovative use of helicopters illustrated, provided the security forces with real-time information which acted as force multipliers by neutralising the numerical inferiority of the security forces and ensuring economy of effort. Tactical improvisation such as the advent of the rooftop patrols highlights the importance of initiative at the small-unit level. If these factors and considerations are taken into account, the military's handling of any internal security operation will have a greater likelihood of success.

Endnotes

1 Public Record Office (PRO), WO 32/17208, "Report on Military Action Taken in The Singapore Riots 25 October - 2 November 1956" (hereafter called ROMA), pp. 45-46.

2 This was an exercise in limited self-government. Partial power was transferred to a Legislative Assembly comprising 32 members, including 25 popularly-elected representatives, 4 nominated unofficials representing special interests and 3 British ex-officio officials holding and retaining "reserve" powers over the important portfolios of finance, law, external affairs, defence and internal security. The majority party would form the government with a 4-year term of office, contributing 6 members to a 9-man cabinet known as the Council of Ministers that replaced the Executive Council and which also included the 3 ex-officio members and was presided by the Governor. See Yeo Kim Wah, *Political Development in Singapore 1945-1955* (Singapore: Singapore University Press, 1973), pp. 60-61.

3 The LF was created from a splinter group of the Labour Party in 1953. In the elections, the LF won 10 seats; the Alliance, 3 seats; the Progressive Party (PP), 4 seats; the Democratic Party (DP), 2 seats; the people's Action Party (PAP), 3 seats; Independents, 3 seats. The LF formed a coalition government with the Alliance. Additionally, 2 LF party members were appointed as nominated unofficials while the PAP became the opposition. In their political orientations, the LF, PAP and Alliance constituted the left-wing while the PP and DP were right-wing. See *ibid.*, p. 274.

4 The liberalisation of the political arena took place in the context of the dismantling of the Emergency Regulations, imposed with the declaration of Emergency in 1948 that severely proscribed Communist and left-wing political activities. Liberalisation allowed the regeneration of Communist Open Front (CUF) organisations set up by the banned Malayan Communist Party. These organisations were supported mainly by Chinese working-class labourers and Chinese-educated youths who were discriminated against economically and socially in an English-dominated society. With an expanded franchise and the political liberalisation engendered by the advent of the Rendel Constitution, left-wing parties like the LF and the PAP successfully tapped into these disaffected voting streams.

5 The BDCC(FE) was created in August 1948. It was a committee drawing together all the British Governors in the Far East, the Australian Commissioner and the three service chiefs in the Far East theatre, presided over by the UK Commissioner-General for Southeast Asia. The American Consul-General sat in as an observer. The purpose of the Committee was to consider long-range political-military problems in the Far East in terms of the world situation. See National Archives and Records Administration, Washington, D.C., RG 59, Box 14, Malaya: Reports. "Analysis of Situation and Policy in Malaya", n.d.

6 CAB 131/16, DC(55)26, COS memorandum for Cabinet Defence Committee on 'The internal security situation in Singapore', 25 July 1955. Printed in D. Goldsworthy, ed., *British Documents on the End of Empire: The Conservative Government and the End of Empire 1951-1957, Part II: Politics and Administration* (London: HMSO, 1994), doc. 350, pp. 384-385.

7 PRO, FO 1091/45, Secretariat Minute (56) 74, General Headquarters (GHQ), Far East Land Forces (FARELF) to Far East Defence Secretariat, BDCC(FE), 20 January 1956. See Annex, 'Reinforcements for Singapore' dated 19 January 1956.

8 These units consisted of 1st Singapore Regiment, RA, a mainly Malay-staffed artillery battalion, subsequently to be named "X" Battalion; "Y" Battalion, consisting of Malays drawn from the Malayan Basic Training Centre and British soldiers drawn from the Regimental Pay Office; the third was an improvised Battalion drawn from British soldiers serving in administrative units and GHQ, FARELF. See ROMA, pp. 10-11.

9 PRO, DEFE 7/503, J.I.C.(F.E.) (56)8 , 'The Immediate Repercussions in Singapore of a Failure in the London Talks Next Month', 10 March 1956.

10 PRO, FO 1091/47, Secretariat Minute (56) 574, Far East Defence Secretariat to BDCC(FE), 24 May 1956. See attached extract of COS (56) 50, Item 3, dated 15 May 1956.

11 R. Clutterbuck, *Conflict and Violence in Singapore and Malaysia, 1945-1983* (Singapore: Graham Brash (Pte) Ltd., 1984), p. 116; M.S. Gill, *History of the Singapore Infantry Regiment 1957-1967* (Singapore: The Singapore Command and Staff College, 1990), p. 19.

12 PRO, FO 1091/47, Personal Telegram No. 194, Governor, Singapore, Sir Robert Black to Secretary of State for the Colonies[hereafter Colonial Secretary], 9 June 1956. The units involved were Headquarters (HQ) 18 Independent Infantry Brigade, "X" and "Y" Battalions, 1st Queen's Royal Regiment, 1st King's Own Scottish Borderers and Training Squadron Armoured Cars, 1st King's Dragoon Guards. Two battalions in South Johore on counter-insurgency operations were also available as reinforcements if necessary.

13 Emphasis in original. See ROMA, p. 10.

14 *Ibid.*, p. 12.

15 *Ibid.*, p. 10.

16 Emphasis mine. See *ibid.*, pp. 10,12; Clutterbuck, *Conflict and Violence*, pp. 116-117.

17 See ROMA, p. 12.

18 Ibid., p. 11.

19 For a concise account of the 1956 constitutional talks, see Albert Lau, "The Colonial Office and the Singapore Merdeka Mission, 23 April to 15 May 1956", *Journal of the South Seas Society* 49, Special Issue (1994), pp. 104-122.

20 PRO, FO 1091/47, Personal Telegram No. 194 from Governor, Singapore to Colonial Secretary, 9 June 1956.

21 Clutterbuck, *Conflict and Violence*, p. 120.

22 Emphasis mine. See ROMA, p. 14.

23 Emphasis mine. See *ibid.*, pp. 14, 45.

24 Ibid., p. 45.

25 Ibid., pp. 14-15; Clutterbuck, *Conflict and Violence*, p. 122.

26 ROMA, p. 16; PRO, CO 1030/187, Telegram No. 505, Governor, Singapore to Colonial Secretary, 25 October 1956; Telegram No. 506, Governor, Singapore to Colonial Secretary, 26 October 1956; Clutterbuck, *Conflict and Violence*, p. 122.

27 ROMA, p. 29.

28 See *ibid.*, pp. 27-28.

29 Clutterbuck, *Conflict and Violence*, p. 132.

30 ROMA, p. 39.

31 Clutterbuck, *Conflict and Violence*, p. 129.

32 Ibid., p. 134.

33 The rules of engagement are detailed in ROMA, "HQ Singapore Base District Instructions to Junior Leaders on Internal Security Operations", pp. 54-57. In particular, emphasis was laid on using minimum fire, i.e. discharging one round each time with full accounting of the discharged cartridge. Automatic weapons are NOT to be used. For an assessment of small-unit leadership during the operation, see also pp. 48, 52.

34 Ibid., pp. 22, 52; Clutterbuck, *Conflict and Violence*, pp. 131, 133-134.

35 ROMA, pp. 37-38; Clutterbuck, *Conflict and Violence*, pp. 133-134.

36 ROMA, pp. 32-33; Clutterbuck, *Conflict and Violence*, p. 132; D. Bloodworth, *The Tiger and the Trojan Horse* (Singapore: Times Books, 1986), p. 147.

37 Gill, *History of the SIR*, pp. 4-12.

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Charging into the Twilight... What the Horse Cavalry and Smart Bombs Can Teach Us About Military Innovations

by LTA Choy Dawen

The military in many ways, is a large bureaucracy. Like many other organisations of great mass, it sometimes suffers from an inertia towards innovation, especially changes directly affecting its structure, traditions and doctrine. Furthermore, because of the way the military is structured, military personnel are arguably more resistant to change than bureaucrats of other large organisations. The career of an officer, without exception, begins at the bottom rung of the hierarchy where obedience to orders is paramount, and usually at an age where the young second lieutenant is "more likely to take up existing opinions than to form his own."¹ He begins to absorb the teachings of his superiors, and the emotional intensity of war further cements these inchoate notions into beliefs. By the time he reaches the position of command and leadership, the military officer would have acquired a lasting set of paradigms profoundly influencing his behaviour and decisions. Other than the political masters of the military and the occasional civilian consultant, no individual can assume a position of influence in the military without going through this bottom-up route - a formula that unsurprisingly, yields a very high probability of generating an organisation whose leadership is composed of individuals with similar views and visions.

The lessons of evolutionary biology are well known to us - populations with a limited gene pool are highly vulnerable to shocks in the external environment. When disease strikes, an entire population may be wiped out if everybody shares the same susceptible gene. In the case of the military, uniformity of conviction is sometimes translated into a dogmatic approach to warfare which has drawn criticisms that the military prepares for the last war. Proponents of this view would cite examples such as the persistence of the horse cavalry in European armies of the early 20th century², or over-emphasise strategic bombing by the bomber-generals of the US Air Force after World War II.³ But the battle-hardened beliefs of the military are not always the archaic notions of a generation whose time has passed - there are cases aplenty too of over-enthusiasm for new methods and technology. One such example is the Royal Air Force's 1957 White Paper advocating that surface-to-air missiles would obviate the need for manned fighters. This resulted in the recommendation that all development work on fighters more advanced than the *Lightning* jet be discontinued.⁴ As in biology, not all mutations are beneficial.

Separating the wheat from the chaff is inherently a daunting task in the case of military innovation because, in addition to the difficulty of designing rigorous tests to probe a weapon system's capabilities under anticipated war conditions, interpreting of the test results is itself a subject fraught with debate. Technical failure usually speaks for itself, but what if a weapon system performs according to engineering expectations yet fails to achieve the desired mission objectives? Is the system then a technological dud, or can its failure be ascribed to a mismatch between weapon and mission? A machine-gun may give the infantry soldier an incredible amount of firepower, but if conceived and developed as a cavalry weapon to be used on horseback, its inaccuracy would be a severe handicap and further development may be stifled.

The military's doctrine and policies can therefore have profound implications on weapon development and procurement, and it is therefore important to ensure that these do not become set in stone due to bureaucratic inertia and leadership obduracy. The development of a weapon system, regardless of the weapon's possible technical or operational merit, would be stunted if there is institutional resistance to it, especially when that resistance comes from the very organisation responsible for its development. The armoured vehicle faction would be understandably unenthusiastic about being responsible for the development of portable anti-tank missiles. Even the entire army may drag its feet if the operational doctrine called for tank versus tank engagements with infantry serving only as mop-up and occupation forces. Since the infantry would probably never confront a tank, why bother spending money developing portable missiles?

Bureaucratic resistance to innovation thus forms the underlying theme in this essay. To begin the discussion, the first section will examine the persistence of the horse cavalry in the early quarter of the 20th century as an historical example of how weapon systems can be prolonged beyond their useful time as a result of institutional and political forces. These forces further strengthened by the vagaries of weapon evaluation, make it difficult to judge the relative effectiveness of new and existing systems. Analytic methods such as operational research can help reduce such uncertainties, they too are vulnerable to human prejudice, as the subsequent section on the development of smart bombs in the US Air Force will demonstrate. The implications of these two case examples on the SAF will then be considered in the final section.

The Officer and His Steed...

The longevity of the horse cavalry in European armies in the early 20th century seems, on hindsight, a perfect demonstration of bureaucratic inertia to change. It is easy to criticise and laugh at the mistakes made then. The dilemma between military innovation and organisational change which it reveals, however, is still pertinent today. As new and even more complex technologies emerge, the problem of assimilation often becomes not just a question of *how*, but also a question of *why*. Given that a battle-tested weapon system exists, why is there a need to replace it with a new and unproven system? That the horse cavalry was eventually found obsolete and retired from service should not blind us to some of the intriguing reasons why it lingered despite the challenge of newer weapon systems such as the machine-gun and the tank.

One common reason in many instances of military innovation is that the new challenger had yet to be perfected, thereby allowing the incumbent system to maintain temporary parity. To the casual observer it may seem intuitively obvious that cavalry armed with lance and sabre would be fodder for automatic weapons, but it is necessary to remember that the early machine-guns were quite unreliable in combat and required significant logistical support to keep firing, thereby making them more suitable for static defence only. Similarly, although tanks could travel faster than horses, they could not pass through forested terrain. On the battlefield, the cavalry was thus able to maintain a degree of combat viability due to its utility in reconnaissance and its ability to conduct quick flank attacks and ignite terror with a well-executed charge. One case during WW I was when the Canadian cavalry which allegedly "charged a group of German machine guns, and came out unscathed, so great was the surprise achieved".⁵ It would be unthinkable today to pit the horse cavalry against modern automatic weapons or tanks, but in the early years of the 20th century it was perhaps not a ridiculous proposition as one might imagine.

The ambiguities of weapon system assessment further complicate the process of innovation. In peacetime, it is exceedingly difficult to devise tests that can accurately predict operational performance in war. The assumptions behind a test often predetermines the result. Since it is highly unlikely that the newer weapon systems can be better than the existing systems in every imaginable way, either one could prove superior to the other depending on the battle situation. Heavily forested terrain would favour horse cavalry over tanks, but flat desert or grass plains would tip the scales towards tanks instead. An offensive doctrine would similarly benefit the horse cavalry because of its relative mobility over machine guns, yet the automatic weapons would prevail in a defensive doctrine. The war scenario assumed for a weapon trial can therefore greatly influence the outcome, sometimes leading to acrimonious debate as to which scenario is most realistic for a future war.

Unfortunately for the new challenger, such contests invariably puts it at a disadvantage because existing systems would most likely have been developed based on the experience of previous wars. It is often not unreasonable to assume that the next war would be, to a large extent, similar to previous wars. As a result, incumbent weapons tend to have an advantage because they usually conform to existing ideas about war. On the other hand, new systems may require fundamental changes to the conduct of war in order to maximise their potential - a lengthy and subjective process since no one can predict what the next war would look like. The historically decisive role played by the cavalry in many major battles prior to World War I surely contributed significantly to its ability to fend off the challenge from machine guns and tanks for more than a quarter of a century.

Even recent war experience which reveals flaws in existing equipment need not necessarily be accepted as conclusive evidence for change, and rightly so. Wars are seldom won on the basis of a single battle, and battles are often fought under vastly dissimilar conditions, thereby requiring the use of tactics uniquely tailored to the situation at hand. If shortcomings are revealed in one engagement, how is one to rigorously conclude that the deficiencies are part of a larger trend, unless further evidence is accrued? The British cavalry commander in Africa concluded, after the Boer War in South Africa (1898-1901) where both rifles and cavalry were employed, that the experience of the war was not relevant to Europe because the tactics and force structure of the Boers were different from those of European armies, and the wide, open terrain in Africa was not representative of the geography of continental Europe.⁶ With the benefit of hindsight it is easy to criticise his short-sightedness and poor military analysis, but his concerns about the applicability of the Boer war experience to a possible war in Europe were valid and academically sound.

In the absence of unambiguous technical or operational reasons for innovation, bureaucratic and political forces thus often become the determining factor in effecting change. In particular, since there is no analytic method of predicting future war conditions, often the view that prevails is the one possessed by senior military leaders and codified in doctrine, which in turn dictates the nature of weapon evaluation tests and tactics development, sometimes to the detriment of systems that require fundamental revisions in military thinking. The slow embrace of helicopters by the US Army as a revolutionary means for improving tactical mobility, for example, can be attributed to the lack of influential leaders in the Army who were familiar with aviation and its potential⁷ - those who were knowledgeable had already left when the US Army Air Forces became a separate service, the US Air Force, after World War II. Together with the inherently insular nature of military organisations, which usually do not permit direct entry into the decision-making echelons, peacetime innovation has therefore frequently been limited by the speed of leadership renewal, often taking as long as an entire generation of officers to have noticeable effect.⁸

This was almost certainly the case for the horse cavalry, for it was a clique in the officer corps made up exclusively by those who had the opportunity to ride in their youth, and whose members also filled key positions of influence in the army, such as the aforementioned cavalry commander who in 1914 became the Commander-in-Chief of the British Expeditionary Forces. The importance of the missions assigned to the cavalry, including reconnaissance, harassment of enemy flanks and rear, pursuit of retreating forces - and especially that of delivering the *coup de grace* to the enemy, the charge - served only to enhance their feelings of superiority and reinforce resistance to change. Furthermore, political forces also came into play, with the aristocratic traditions of the cavalry gaining it considerable support amongst the governing elite when its role was threatened by the advent of more capable weaponry. Military innovation thus became subject to bureaucratic forces, because the lack of rigorous methodology for determining the relative effectiveness of the cavalry and its challengers created a vacuum which was filled by military traditions, self-interest and politics.

The institutional survival of the cavalry amidst revolutionary changes in warfare during the early 20th century therefore holds important lessons for students of military innovation, because it demonstrates that innovation requires political co-ordination as much as technological achievement. Bureaucratic forces become an important determinant when there is no clearly defined mechanism for introducing innovation into an organisation. The application of more rigorous methods of military analysis, especially with the advent of the field of operations research, may help take away some of the guesswork involved in foretelling which weapons will be effective in tomorrow's war, thereby restoring some measure of scientific basis to technological innovation. However, the insights of the crystal ball are only as good as the skill of the reader, and there are occasions when bias and prejudice cloud the conclusions offered by meticulous analysis. In the worst instances, misguided analyses can even be used to lend an air of false credibility to faulty hypotheses. Such was the case for the development of smart bombs in the US Air Force.

The 'Revolution' in Military Affairs

Between 1965 and 1968, the Thanh Hao bridge complex in North Vietnam was attacked by some 600 air-to-ground sorties, none of which succeeded in disabling the facility. In 1972, however, just eight aircraft equipped with laser-guided bombs knocked out the bridge in a single mission. These weapons were the predecessors of the precision munitions that so wowed the world during the 1991 Gulf War, and were

themselves part of a long line of 'smart' bombs dating back to World War II.⁹ The use of smart bombs during the Gulf War was 'revolutionary' only in the sense that their important contribution was publicly recognised for the first time.

As early as 1944, radar-guided free fall bombs such as the *Axon* and *Razor* were being employed in limited numbers in the Mediterranean and Burma-China theatres. Although they proved effective, interest in these weapons was short-lived because of the low bomb yield (about 1,000 lbs for *Razon*) and the emphasis on nuclear weapons in the years after World War II, for which accuracy was unimportant. Development only resumed during the Vietnam War, when inadequacies in tactical bombing accuracy were revealed and new technology was being sought to address the problem. Texas Instruments even developed laser guidance kits for retrofitting onto the existing M-117 and Mk-84 bombs as early as 1968, but the Air Force showed little enthusiasm for the new weapon.

Several arguments were used to support the Air Force disinterest. Laser-guided munitions required an aircraft to loiter over the target area in order to illuminate the target with laser light, thereby exposing the aircraft to counter fire. The higher risk of aircraft and pilot loss was therefore judged to compensate for the supposed increase in bombing accuracy. Furthermore, by the time these laser guidance kits were introduced, US President Johnson had already ordered a halt to virtually all bombing of North Vietnam in October 1968. The Air Force thus had to focus on the interdiction of supply routes in Laos and Cambodia, as well as close support and harassment missions in South Vietnam. Instead of high value targets, the Air Force found itself going after supply trucks and other small vehicles. The use of \$3,000 smart bombs to destroy \$1,000 trucks being deemed wasteful, the Air Force resisted even efforts to increase smart bomb production to just 600 per month, even though they were flying some 20,000 fighter-bomber sorties per month at that time.¹⁰ Most importantly, since the Air Force munitions budget was at that time determined by the tonnage of bombs dropped, adoption of the lighter yet more costly smart bombs could have had serious budgetary implications.

However, there were serious flaws in the first two arguments. Until 1970 most of the North Vietnamese targets were poorly defended by ground defences so there was hardly any substantial anti-aircraft threat; increased risk to aircraft and pilot loss, while real, was small. The Air Force failed to recognise that it would probably take more than three \$1,000 unguided bombs to do the job of a single \$3,000 smart bomb, thus smart bombs, while expensive in the short-term, were more cost-effective in the long-run. In addition, the Air force's analysis also displayed an appalling ignorance about war economics - it simply assumed that the *military value* of destroying the truck and the supplies it carried equalled the simple replacement cost of \$1,000.

For its part, the Office of the Secretary of Defense (OSD) also failed to push for the adoption of smart weapons. The Systems Analysis (SA) branch within the OSD was responsible for determining the efficacy of new technology and weapons. Using an early measure of bombing effectiveness based on fighter sorties flown, smart bombs were naturally put at a disadvantage in the SA evaluations since their greater accuracy would require fewer sorties to accomplish the same objectives. A later revision to a measure based on tonnage dropped per sortie also penalised the smart bomb since they cost more than dumb bombs of the same weight. Under such misguided criteria, it was therefore not surprising that smart bombs received scant attention.

Fortunately, in 1972, General John Lavelle assumed command of the 7th Air Force operating in Vietnam. Being a staunch advocate of smart bombs as well as having been involved in their development, he pressed for their greater use. When bombing of North Vietnam resumed in 1972, these smart bombs were deployed with dramatic success, paving the way for further development into the precision munitions employed some two decades later in the 1991 Gulf War. However, for the many pilots captured or killed while flying ground attack sorties during the Vietnam War, these smart bombs came too late - one wonders how many lives could have been saved had the smart weapons been put to proper use earlier in the war.

This tragic case of delayed innovation reflects the reality that the scientific method is still subject to human prejudice. It is difficult to believe that the SA branch was really that naive as to use measures that obviously penalised the better system, or that the Air Force would actually subscribe to the ridiculous \$3,000 bomb

versus \$1,000 truck argument. More likely, these pseudo-scientific analyses were used to support honest scepticism about new-fangled technology being able to solve the problem of bombing accuracy, usually regarded as a function of pilot competency. In addition, theatre commanders were given complete discretion over the deployment of new weapon systems. Insulated from the smart bomb versus dumb bomb debates at home and more interested in the war under their charge, they put a low priority on assimilating smart bombs into the US arsenal; it is instructive to note that smart bombs became widely used in the war only when General Lavelle became commander of the 7th Air Force. Thus, despite the pervasive use of rigorous analysis in the military introduced by then Secretary of Defence Robert McNamara, bureaucratic resistance and inertia - hiding under the cover of 'scientific' study - still obstructed the innovation process.

Conclusion

The arguments in the above sections are especially relevant to the SAF as it relies heavily on technological superiority as a force multiplier. Since the SAF generally does not undertake indigenous development of its own weapon systems, its procurement process is the primary source of technological innovation and therefore potentially subject to political and organisational influences. For example, the army pursues a doctrine of taking the fight to the enemy, hence its tactics and weapon systems are oriented towards jungle warfare in consideration of the geography of the region. If it pursues a defensive stance, however, Singapore's city landscape would dictate a focus on urban warfare instead, with tactics and weapons to match. It is therefore crucial to recognise that many procurement decisions are thus driven by the current army doctrine. Continual review of its validity is an equally important component of technological innovation. The SAF cannot afford to end up like the US Army in the 1960s, whose heavily mechanised divisions optimised for large-scale tank battles on the European plains were woefully inadequate for the jungle warfare of the Vietnam War which favoured light infantry.

The organisational structure of the SAF may also have important implications for its innovation process. The Defence Technology Group (DTG), responsible for many aspects of technological development in the SAF, is a largely civilian organisation which is kept separate from the military that it serves. This division potentially fosters innovation since the DTG is unencumbered by military traditions and generally sees a higher turnover in staff, which creates a constant supply of fresh ideas. However, since the military is ultimately responsible for implementation, the transfer of these ideas may be hindered if the military believes them to be irrelevant or too radical - after all, what do civilians know about military affairs? Separating the organisation responsible for innovation may allow interesting ideas to develop free of interference but is no guarantee that the military will adopt them for implementation, as the experience with the smart bomb illustrates. Careful management of the relationship between the SAF and the DTG is thus necessary for the two to cooperate in technological innovation.

Innovation is therefore not merely about good ideas supplanting outmoded concepts, superior technology replacing legacy equipment. That innovation is a product of political achievement as much as intellectual accomplishment is frequently neglected, and usually with tragic results. The horse cavalry successfully survived the rapid technological changes around the turn of century because it was impossible to clearly establish the superiority of alternatives, allowing its political influence and institutional power to prolong its existence. Even with the introduction of operations research and advanced analytical techniques, it is still impossible to eliminate bureaucratic forces and human bias. Smart bombs were a compelling improvement over dumb bombs, yet organisational inertia delayed their introduction until well into the Vietnam War, by which time their impact was dramatic but inconsequential. The lesson: sheer technical merit is a necessary but insufficient ingredient for bringing worthwhile innovations to fruition. Attention must also be given to managing the organisational friction that accompanies any kind of change to the status quo, as well as re-examining the beliefs and value systems of the organisation that persist as a result of bureaucratic inertia.

Endnotes

1 Colonel John Mitchell, *Thoughts on Tactics and Military Organization*, cited in Stephen P. Rosen, *Winning the Next War* (Ithaca: Cornell University Press), 1991, page 2.

2 Edward L. Katzenbach, Jr., "The Horse Cavalry in the Twentieth Century", *Readings in American Foreign Policy* (Boston: Little Brown), 1973.

3 Colonel Mike Worden, *Rise of the Fighter Generals* (Alabama: Air University Press), 1998. A comprehensive book detailing how the bomber generals came to dominate the US Air Force.

4 Timothy Garden, "The Royal Air Force: Air Power and High Technology", *The Defence Equation* (London: Brassey's Defence Publishers), 1986, page 122.

5 Edward L. Katzenbach, Jr., "The Horse Cavalry in the Twentieth Century", *Readings in American Foreign Policy* (Boston: Little Brown), 1973, page 184

6 Edward L. Katzenbach, Jr., "The Horse Cavalry in the Twentieth Century", page 181.

7 Stephen P. Rosen, *Winning the Next War @ Innovation and the Modern Military* (Ithaca: Cornell University Press), 1991, pages 85-95.

8 Stephen P. Rosen, *Winning the Next War*, page 105.

9 "Smart Bombs", *Commission on the Organization of the Government for the Conduct of Foreign Policy*, Volume 4, US Government Printing Office, 1975, page 191.

10 "Smart Bombs", page 194-5.

11 When applied to unguided munitions, these measures of effectiveness were not unreasonable since a better designed dumb bomb might be expected to be cheaper and more reliable, allowing more bombs to be dropped and more sorties to be flown. And since most of the munitions in the US arsenal at that time were unguided, it is entirely possible that bureaucratic oversight or organisational inertia led to the blind application of these criteria to smart bombs without the SA branch realising that they were in fact comparing apples to oranges.

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Synopses of the Ten Commendation Award Essays

- **Educating the SAF for the Millennium: Dealing with the Dynamics of Technology, Society and Politics**

by MAJ Lee Swee Ann, 191 SQN

The author asserts that knowledge plays a key role in the process of economic growth. The SAF must adjust to the changing world where social and economic changes will have a profound impact on the SAF and military education.

- **Automated Command and Control Decisions: A Prognosis**

by MAJ Tan Too Ping, AOD HQ RSAF

Can machines be designed to make credible military decisions on the deployment of forces in the battlefield? The author is of the opinion that such systems may be incorporated into operations in the near future.

- **A Historical Perspective on the Evolving Notions About Leadership Studies and Their Contributors**

by CPT Charn I-Harn, Alvin, BMTC Sch 2 'U' Company

The author examines the major contributions of leadership theories and their impact on organisations today. If an organisation is to be effective, it requires a strong and effective leadership; it is no different for the SAF.

- **Women in Combat**

by CPT Lim Ann Nee, ADSD

The author dispels the age-old myth on the inability of women to fight under battle conditions and provides examples where they have been used extensively in combat to great effect against their male adversaries.

- **Enhanced Manoeuverability in Air Combat**

by CPT Toh Kok Keen, Adrain, TAB

This essay looks at recent developments in fighter aircraft manoeuverability as well as arguments on whether EFM (Enhanced Fighter Manoeuverability)-capable aircraft would actually be more effective in terms of kill ratios and survivability in combat.

- **Proliferation of Ballistic Missiles**

by CPT Low Chung Guan, 120 SQN

The author discusses the characteristics of ballistic missiles and makes a comparison with the strike aircraft besides looking at the motivation among Third World countries to acquire such weapon platforms.

- **Unmanned Aerial Vehicles: Far From Developmental Maturity**

by CPT Won Jiunn Shyong, 128 SQN

The unmanned air vehicle (UAV) proved to be a powerful intelligence tool during Operation Desert Storm. However, the author argues that the UAV has still some way to go before it attains the status of a potent war weapon.

- **Cold War Politics and the 'Will to Fight': Suez 1956**

by LTA Pritam Singh, TRC/OPC

This essay provides a synopsis of the events surrounding the 1956 Suez crisis and its impact on the Cold War. The writer also uses the crisis as a case study to provide a perspective on the SAF's notion of the 'will to fight'.

- **Nuclear Proliferation and Southeast Asia**

by 2LT Sim Kai, TRC/OPC

Should nuclear proliferation be supported? The author debates the issue and concludes that nuclear proliferation is unlikely in Southeast Asia, citing the economic crisis and the Southeast Asia Nuclear Weapons Free Zone Treaty as reasons for the assessment.

- **Comprehensive Security and the International Role of the SAF**

by 2LT Tan Mui Li, HQ 10 SIB Signal Company

The author attempts to overturn the view that the SAF is merely a deterrent force and not a player in Singapore's foreign policy. He argues that the dynamics of the new millennium dictate an international role for the SAF which it must play well.

Book Review:

Acts of War: The Behaviour of Men in Battle by Richard Holmes

Reviewed by Mr Tan Puay Seng

This is a commendable effort by Richard Holmes in exploring the fundamental issues influencing the nature of man's behaviour in battle.¹ The book is a well-researched and documented analytical study of the soldier's feelings and behaviour during training, his experience in battle, and its aftermath (p.30). The study is well covered: during battle, he discusses the factors that motivate soldiers to keep them going in the face of fatigue, fear and death. Beyond the battlefield, he deals with the impact the basic training, the influence of religion and background, the importance of personal leadership and the *esprit de corps* that influences the soldier to continue fighting in the heat of battle.

The chapters are organised systematically with a well-structured account of the soldier's experience before, during and the aftermath of battle. For an impressive start, Holmes provides a solid theoretical background on the methodologies that historians have used to study the actualities of war. He judiciously examines the merits and de-merits of each method. This is followed by an effort to elaborate the significance of non-battle elements of war like basic training, drill and instilling values during training - an important ritual and morale-builder, and the effects of the wartime environment on the soldier.

The subsequent chapters deal with the impact of battle per se on the individual soldier. Holmes proceeds to search for complex and elusive factors that influence the soldier on the battlefield (p.18). He collates the theories of psychologists, sociologists and organisational behaviorists and come up with a cohesive framework explaining man's behaviour in battle. He also provides general theories on how to cope with stress during combat. He analyses the degree of stress imposed by the soldier's feeling of pre-contact battle apprehension and the stresses as a result of the empty battlefield, shell shock and the feeling of utter disorganisation when the battle begins. In addition, he explores in great detail the soldier's feelings towards injury and death, the experience of watching others die and suffer and examines the major causes of psychiatric breakdown. He also explains how the army's organisational structure, from a division right down to a squad, contributes to the cohesion, teamwork fighting spirit and the valour of the common men (p.315). In the end, Holmes sees a dilemma in which every individual, while in the process of harnessing the advantages of technology by probing beyond the confines of our own planet, has increasingly become a prisoner to these very developments.

At times, Holmes also uses the observations of past authors of authority and draws on eye-witness accounts of war over the past two centuries to argue his point. For instance, the author tries to provide a fresh perspective to Dinter's suggestion that Hero or Coward?² is every soldier's unspoken question to himself (p.56). While Marshall argues in his thought-provoking book, *Men Against Fire*³, that there is little emphasis on telling the soldier what to expect in battle, Holmes provides a more convincing argument that there has been considerable effort made to battle-inoculate the men (p.52). Similarly, Holmes uses the issues of leadership, training and group cohesion to explain Marshall's claim why soldiers engaged in the heat of battle became lost and uncertain, undergoing complete 'moral disintegration' when they take cover (p.160). By taking up the challenge of capitalising the various arguments and contributions of reputable writers, and at the same time digressing on their strengths and weaknesses for the serious reader, Holmes demonstrates a firm grasp of the topic. To present a more realistic account, Holmes brings together a range of recollections, memoirs of veterans from the two World Wars, Korea, Vietnam, the Falklands, and the Arab-Israeli conflicts to present a deeper understanding of combat psychology and their emotional legacy.

What makes *Acts of War* a clear, comprehensive and well-articulated book is the author's ability to present a systematic and wide-ranging study of man's behaviour in battle. Notwithstanding this, the book has some weaknesses. The author fails to express certain external conditions in the battlefield substantially that, over

the centuries, may have an appreciative and direct effect on the emotion and behaviour of soldiers in battle. To what extent does the improvement in the range and lethality of weaponry, which increases the scale and duration of the modern war, mould the soldier's attitude towards death, fear and mutilation?4 In contrast, can the use of mechanisation in modern combat and advances in medical science help alleviate the mental and physical stress in combat? These unfortunately, are issues the author fails to address.

In general, *Acts of War* has some weaknesses but its strengths outweigh the former. A well written and informative account of men's behaviour in battle, *Acts of War* is certainly a welcome addition on combat sociology and psychology.

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

Acts of War: The Behaviour of Men in Battle

Richard Holmes

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Endnotes

1 This book is also published by Pimlico, London in 1985, bearing the title *The Firing Line*.

2 Elmar Dinter, *Hero or Coward: Pressures Facing the Soldier in Battle*, (London: Frank Cass, 1985).

3 S.L.A. Marshall, *Men Against Fire: The Problem of Battle Command in Future War*, (United States: Peter Smith, 1978).

4 Please see John Keegan, *The Face of Battle: A Study of Agincourt, Waterloo and the Somme*, (London: Pimlico, 1976).

Mr Tan Puay Seng is presently a Personal Executive in the Prime Minister's Office. He holds a BSc in Mathematics from the National University of Singapore and an MA (War Studies) from King's College, University of London.

Back Issues	Journal
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Selected Books and Reports:

Edward Luttwak

Edward Nicolae Luttwak is a leading American academic, international consultant and writer in military strategy. Born in Arad, Romania, in 1942, he was educated in the London School of Economics and the John Hopkins University. He began his academic career with the University of Bath and has held various academic positions at renowned universities in the US. Luttwak is currently holding the Burke Chair of Strategy at the Centre for Strategic and International Studies, Washington DC. He is also an editorial member of several journals, including the *Journal for Strategic Studies* and *Orbis Publications*, and has served as a strategic adviser to governments and the private industry.

His first book, *Coup d'Etat*, published in 1968, is a classic which has been translated into 12 languages. In it he analyses how coups are prepared and implemented. His second book, *Strategy: The Logic of War and Peace*, published in 1987, is a perceptive piece of work revealing the paradoxical nature of strategy and is a major contribution to understanding strategy. He applies his expert knowledge of military science, military history and international politics to each level of strategy: technical, tactical, and finally the highest level of grand strategy, where political and military actions converge. (*This book is one of the recommended texts in the SAF Professional Reading Programme.*)

In *The Israeli Army*, which he co-wrote with Dan Horowitz, the development of the Israeli Army is traced from 1948, when the improvised forces of the Haganah succeeded against the armies of Egypt, Syria, Lebanon, Iraq and Jordan, to the 1973 October War. The authors elaborate how the Israeli Army achieved its status through a "combination of technical and strategic skills together with an almost philosophical comprehension of its essential objectives".

The *Grand Strategy of the Roman Army*, written in 1976, uses Luttwak's knowledge of modern strategic analyses. It is a systematic and sustained investigation of the Roman strategy. The Roman genius for organisation and governance is still highly relevant today. Using the army as a weapon of psychological persuasion instead of direct military force, it succeeds in ensuring the safety of its citizenry at all levels.

Luttwak's other published works which are available in the SAFTI MI Library include the following:

- *The Dictionary of Modern War*, (London 1971).
- *The Political Uses of Sea Power*, (Baltimore, 1974).
- *The US - USSR Nuclear Weapons Balance*, (Beverly Hills, 1974).
- *The Grand Strategy of the Roman Empire from the First Century AD to the Third*, (USA 1976).
- *Strategic Power: Military Capabilities and Political Utility*, Beverly Hills, (California 1976).
- *Coup d'etat: A Practical Handbook*, (London 1979).
- *Sea Power in the Mediterranean: Political Utility and Military Constraints*, (California 1979).
- *The Israeli Army*, (Cambridge, Massachusetts, 1983).
- *The Grand Strategy of the Soviet Union*, (London, 1983).
- *The Pentagon and the Art of War*, (New York, 1984).
- *Strategy and History*, (New Jersey, 1985).
- *Strategy: The Logic of War and Peace*, (Cambridge, Massachusetts, 1987).
- *The Endangered American Dream: How to Stop the United States From Being a Third World Country and How to Win the Geo-Economic Struggle for Industrial Supremacy*,

(New York, 1993).

Personality Profile:

Zhu De [Chu Teh]

Commander and founder of Chinese Red Army and Field Marshal of the people's Liberation Army

"What kind of war to fight depends on what kinds of arms we have ..."

Marshal Zhu De

Zhu De is regarded as a founder member of the Red Army (the forerunner of the people's Liberation Army [PLA]), and the military tactician who engineered the revolution from which emerged the people's Republic of China. He was one of Mao Zedong's closest comrade-in-arms during the revolution and civil war in China. He commanded the Chinese Red Army against Jiang Jieshi's [Chiang Kaishek] Nationalist Army in 1930-1933 and in the Long March; against the Japanese in Sino-Japanese War, and again against the Nationalist Army in the Civil War of 1945-1949. Together with Mao Zedong, they made a formidable team during the Communist struggle to power. While Mao formulated political doctrines and Zhu De provided the military leadership to transform the doctrines into action. They laboured to reorganise the Red Army into a force fit to resist attacks by the Kuomintang, warlords and Japanese troops.

Zhu De was born in 1886 in Yilong county, a hilly and isolated section north of Sichuan Province. Hailing from a large farming family of humble origins, Zhu De was one of thirteen children. He was raised by his elder uncle, a landlord. After his elementary and secondary education which was funded by his clan, Zhu De went to Chengdu to study physical education before joining the army.

Zhu De was one of the few privileged Red Army leaders to receive professional military education. Zhu De entered the Yunnan Military Academy in Kunming in 1908 and went on to teach in the academy after his graduation. He participated in military campaigns with armies of the Yunnan warlords. He commanded units along the China-Laos border and the China-Vietnam border during early Republican years. During this time, Zhu De developed a strong opium habit but managed to recover from the addiction in 1922 at a Shanghai hospital.

Zhu De began to read Marxism and Leninism in Shanghai. The turning point came in late 1922, during his mid-30s, when he went to Europe. He first went to Germany to study at the Gottingen University (1922-25) before joining the Communist party with Zhou Enlai and others as his sponsors. He was arrested twice for his revolutionary activities and was eventually exiled. In July 1925, he travelled to the Soviet Union to study military affairs before returning to China in 1926.

After taking part in several abortive Communist uprisings in Huzhou, Shunqing, and Nanchang in 1927, where Zhu De played the role of a "highly-placed 'mole' in the local Nationalist forces", he moved into the Fujian Province and reorganised his units into the "Nine Revolutionary Army". Influenced by his early military training, Zhu De emphasised conventional fighting methods. Other Chinese Communist leaders such as Mao Zedong, however, preferred guerrilla units and tactics. By 1928, Zhu De joined forces with Mao at Jinggangshan where the Fourth Army of the Chinese Workers and Peasants' Red Army was formed with Zhu De as commander. Zhu De adopted the "lure the enemy in deep" principle, concentrating on a superior force to destroy the enemy one by one. Using a combination of regular mobile and partisan guerrilla operations, Zhu De and Mao achieved significant victories against the Nationalist encirclement campaign in 1931.

Mao and Zhu De forged a close political relationship during this period. Both men opposed the Li Lisan line of attempting to take large cities during 1930. Zhu also sided with Mao during the Futian Incident where there was a revolt against Mao in the same year. This was a critical juncture because it coincided with the imminent launch of Chiang Kaishek's five annihilation campaigns against the Communist stronghold. Under great pressure, the Red Army was forced to abandon the Jiangxi Soviet in late 1934. Zhu De assumed the

post of Commander-in-Chief of the famed Long March, which relocated the Communists in Yan'an a year later.

When the Sino-Japanese War broke out in 1937, the Nationalist and Communist formed the second United Front against the Japanese. Zhu De was named deputy commander of the Second War Zone and commander of the Eighth Route Army, the re-designation of the Red Army. He led the main force of the Eighth Route Army in the North China front to conduct independent guerrilla warfare in coordination with the military operations of the Nationalist troops. In March 1938, he directed the combined forces of the Nationalist and Red Army and defeated the Japanese in Shanxi province. After the victory against Japan, the Red Army was once again embroiled in civil war. During this time, the Communist military units were re-designated the people's Liberation Army. Zhu De continued as a Commander-in-Chief. By 1947, the war was turning decisively in favour of the Communists. Victory came within months. Zhu De was accorded a place of honour in Tiananmen when Mao pronounced the establishment of the people's Republic of China on 1 October 1949.

After founding the people's Republic of China, Zhu De served in various positions such as the Vice-Chairman of the party's Politburo, member of the Military Affairs Committee, Defence Minister and many political appointments. During this time, he led delegations to many parts of the world including, Moscow, Hungary, Poland and Czechoslovakia. In October 1950, at the direction of Zhu De, the PLA (styled as the 'Chinese People's Volunteers [CPV]') entered the Korean War with the primary motive of maintaining North Korea as a buffer against a possible attack by "American imperialism". The objective was met but at a high cost: between half a million and a million battle deaths. He was awarded the rank of field marshal in 1955. In 1959, he relinquished all other military posts, retaining his title of marshal in the PLA.

On 6 July 1976, Zhu De died at the age of 90, six months after Zhou Enlai's death and two months before Mao Zedong's death. Zhu De is remembered to this day as a brilliant military tactician. Together with Zhou Enlai and Mao Zedong, Zhu De is recognised as among the most influential founding members of the people's Republic of China.

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Letter to the Editor

Pearl Harbor: Strategic Misconceptions

Dear Editor,

I would like to comment on some points not covered in detail in this otherwise excellent article.

Since the forced opening up of Japan by the US Navy under Commodore Perry during Emperor Meiji's rule, Japan adopted Western methods and set up European-styled institutions in an otherwise traditional and conservative society. European technology and methods were regarded as superior and therefore seen, as the benchmark for the Japanese. In this paradox of modernisation in an inward-looking culture, the Germans trained the Japanese soldiers while the British helped build their navy. To set themselves a benchmark in their pursuit of Westernisation, Japan personified their goal as an enemy. The most obvious candidate for this dubious venture then was Russia, being the closest Western power in the region (China, its long time enemy, was not seen as a worthy threat). This lasted until 1905 after the crushing defeat of the Russian navy and army at the hands of the young modern Japanese armed forces. After WW I, the Japanese saw themselves being increasingly marginalised from its rightful place on the world stage by the major power and rightly identified the US as the next possible enemy in its attempt to dominate the Asia-Pacific region. This was reinforced by Japan humiliating the participation in arms limitation set by the naval conferences in Washington (1921) and London (1930). This, perhaps was a self-fulfilling prophesy as several generations of middle-echelon officers in the 1920-30s were trained and inculcated to see the US as the enemy (rather than China with whom Japan has been waging an unofficial war since 1931). This, no doubt, helped to make the acceptance of war with the US as 'inevitable' when the decision was finally made in 1941. This was not a new scenario as there was much literature since the 1920s suggesting the possibilities of a US-Japan war.

Communication between the Japanese and US governments were handicapped by inaccurate translations, narrow-minded and inept interpreters as well as administrators who failed to understand the intentions and mentality of the other. This resulted in several grave mistakes. The original intention of the oil embargo imposed by the US was mainly in reaction to Japan's occupation of the Vichy-controlled Indochina territories. This later developed to an ultimatum for the Japanese to withdraw from both Indochina and China. The Japanese saw this demand to include the withdrawal from Manchuria where they had installed a puppet government since the early 1930s. The latter was seen as particularly humiliating and paramount to a back-down, loss-of-face situation that the Japanese militarists were unable to accept. This severely curtailed attempts by peace-seeking parties in the Japanese hierarchy to avoid war, which included Admiral Yamamoto, General Tojo (in spite of wartime propaganda) and the Emperor himself. Therefore it was not just a simple matter of an 'East versus West' situation or the US failure to understand the Japanese psyche.

Another important point is that Japan went to war with US because of its prolonged involvement in China. Despite initial rapid advances in the early 1930s, the Japanese miscalculated its ability to conquer China (due to its massive size and persistent nationalist resistance). The Japanese leaders felt that the communist threat by the Soviet Union was real (even though US was officially seen as the enemy) and reacted by building up a buffer zone and reserves in human and natural resources through subjugating China and Southeast Asia. The original plan was to conquer China before expanding southward. Despite problems with the extended Sino-Japanese war, the Army power-brokers, fearing a loss of face and influence if they admitted to their mistakes in the China expeditions, chose to continue the war with China for more than 10 years. However the US embargo of vital war resources (due in part to successful lobbying by the Song family) in 1940-1, including steel, aluminium and petroleum, led to Japan reassessing its priorities. To finish off

China, Japan would need to ensure the much-needed supplies to be freely available. The solution was to take over the colonial territories left (relatively) undefended by the European powers engrossed with the war in their homeland. One good indication of the depth of military involvement in China was the fact that there were more army units in China than the entire Southeast Asian invasion force at the start of hostilities in December 1941. The naval leaders were unable to cap the army expansionists' ambitions, and being well-aware of US industrial capabilities, could guarantee only six months of success (as mentioned by Admiral Yamamoto in the article). It is unlikely that Japan had planned for a war lasting beyond four months; Midway and Guadalcanal were the result of improvised plans after the surprisingly easy victories over the Allies (resulting in the 'Victory Disease', ideation of invincibility).

It is unreasonable to say that the Japanese miscalculated in its pre-emptive attack on the US Pacific Fleet at Pearl Harbor. Even if the Japanese were aware of the Rainbow 5 plan, it still meant that the US would fight the Japanese at the end of the day (there were accusations that the US administration was trying to induce Japan to start the war despite its official 'isolationist' stand). It is doubtful that anyone would leave their flanks unguarded, bearing in mind that the US Fleet at Hawaii was only five days away from the Japanese territories. Then Philippines was certainly a potential rallying point for the US forces in the region, being close to Japan and Southeast Asia. Even with minimal resources, it was possible to indict Japanese shipping lines using B-17 bombers and US naval ships operating from bases in the Philippines. The Japanese merchant ships were highly vulnerable as shown by the success of the US submariners in enemy waters. In any event, the US did follow the Rainbow 5 decision (despite the surprise attack on Pearl Harbor), much to the relief of the main beneficiary of this accord - Britain.

The debate on the 'surprise' attack on Pearl Harbor without a declaration of war is often raised. Although US observers expected Japan to attack US and the British territories by surprise, there were genuine attempts by Japan to declare war with US, as required by the League of Nations. Japan unfortunately had resigned from the League one hour before opening hostilities at Pearl Harbor. This was at the express wish of the Emperor. Unfortunately the Japanese consulate in Washington failed to grasp the significance of the deadline set by the Japanese government and managed to submit the war declaration only one hour after the attack on Pearl Harbor, due to difficulties with encryption. The US had been reading the Japanese 'Purple Code' and were well aware of Japan's intentions (including the declaration of war), but several factors led to the disaster at Pearl Harbor. It was assumed that the US forces at Hawaii were on full war alert, even though the local commanders mistook the warnings to be directed at Japanese saboteurs. A series of miscommunications failed to alert Hawaii of the presence of the Japanese fleet near Oahu. There were even accusations that President Roosevelt was well aware of pending attack on Pearl Harbor which he used to force the Americans into war with Japan, and more importantly, Germany (which was seen as the more dangerous enemy). There was nothing like a sneaky underhanded and 'unprovoked' surprise attack on the US territory to galvanise US public opinion. One wonders had Japan declared war before the attack, whether the US government could have motivated her people as much with the famous 'Remember Pearl Harbor' slogan, and the day of 'infamy'?

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