

POINTER

Journal of the
Singapore Armed Forces

Vol. 27 No. 2 [2001]

V27N2

The Revolution in Military Affairs (RMA): challenge to existing military paradigms and its impact on the Singapore Armed Forces (SAF)

by MAJ Seet Pi Shen

Select enemy. Delete.

The Economist, 8th March 1997¹

In the future, do militaries have to 'close with' the enemy to destroy him or, can they as The Economist magazine suggests, disable, disrupt and even eliminate adversaries from vast distances away by a mere click of the mouse-button? This is just one of the many claims and counter-claims on the future of conflict that the RMA debate has thrown up.

*Regardless of these claims, the RMA's real test of significance is the challenges that it imposes on existing military paradigms. Do the new RMA concepts encourage important changes in military thinking and practices or are they merely 'old wine in new bottles'?*²

The essay takes on that test by firstly addressing what the RMA is. It adopts a broad definition of the RMA that includes technological and non-technological factors that can drive the RMA. This is followed by an examination of some of the main new RMA concepts of information dominance, disengaged combat, synergy and the civilianisation of combat. The analysis will attempt to show that these concepts do impose considerable challenges to present military paradigms, especially in the areas of organisational structure, doctrines and roles of the SAF.

In terms of organisation, the RMA postulates a move away from hierarchical structures with large unwieldy units to networked structures with small, mobile and potent forces. The future of distinct individual services will also be threatened as seamless joint forces are developed. Doctrines will become increasingly non-linear and will see developments in new areas of multinational coalition and non-lethal warfare. Furthermore, the blurring of the civil-military lines in conflict and the growing use of information operations (IO) could threaten the SAF's traditional role at the forefront of warfare.

Taken together, these concepts will confront the entrenched paradigm of military culture. The growing complexity of the future battlefield, combined with the need to operate in environments of continuous change, bordering on chaos, will compel militaries to develop highly adaptive, creative, flexible and learning organisational cultures. These will have a significant impact on the way the SAF structures, trains and operates in the future.

What is the RMA?

The notion of military revolutions grew from Soviet writing of the 1970s and 1980s analysing the revolutionary potential of new military technologies.³ As Marxists, the Soviets were comfortable with the idea that history is driven by revolutions. Western analysts, more familiar with scientific revolutions, focused on technology, with early studies predicting a 'military technical revolution' (MTR).⁴

However, this approach is too narrow, interpreting changes in warfare to be driven by technology. Other factors like economics, society and organisational culture may have just as profound an effect on the RMA.⁵ Societal changes interact with and can directly impact on military systems, meaning that a Revolution in Political Affairs (RPA) could be behind the RMA or working very closely in line with it.⁶

Hence, for this essay, a broader definition is adopted, one that includes non-technology forces interacting with military ones to drive the RMA:

*'A military revolution, in the fullest sense, occurs only when a new civilisation arises to challenge the old, when an entire society transforms itself, forcing its armed services to change at every level simultaneously from technology and culture to organisation, strategy, tactics, training, doctrine, and logistics.'*⁷

The Main RMA Concepts

The 1990s RMA debate is inundated with new ideas and some of these have already been discarded in the rapidly turning RMA cycle. This essay will therefore focus on four major RMA concepts that are still within the mainstream RMA debate as follows:

- Information Dominance;
- Disengaged battle;
- Synergy; and
- Civilianisation of conflict.

Information Dominance⁸

While information has always been a cornerstone of warfare, this is truer now than ever. As an 'Information Age' product, the RMA is driven by rapid, precise and broadly shared information among modern military units.⁹ To achieve mastery, modern militaries will seek information dominance acquiring the necessary information for friendly forces while denying it to the enemy.¹⁰ What does this hold for the military?

Firstly, advances in information and media technology will radically compress time-space relationships and contribute to the growing interrelationships between the levels of war. Inspired by tests like the US Marine Corps' (USMC) Warnet experiment, information dominance envisions internet-like connectivity from tactical through to strategic levels, generating a common tactical picture that facilitates rapid deployment, manoeuvre and fire support for small, widely dispersed units.¹¹ Actions of tactical units will influence not only the immediate tactical level of war, but could bypass the operational level and directly affect the strategic level.¹²

Figure 1 above shows the familiar description of the vertical continuum of war. Figure 2 is perhaps a more accurate representation in terms of information dominance.¹³ Figure 2's checked area demonstrates the blurring of all 3 levels of war the zone of integration and simultaneity. The increased sizes of areas 1 and 2 represent the larger operational interaction with both strategy and tactics, while the darkened section's smaller size represents the compressed decision cycle of the operational commander working at magnified tempo in extended space. That commander will have a much more complicated job recognising simultaneous strategic and tactical events that directly influence strategy, while integrating and synchronising them at the operational level.

Information dominance will threaten existing military organisational structures. Freely available information disrupts hierarchies and redistributes power, often to the benefit of smaller actors. Current specialised hierarchical-based military structures characteristic of Industrial-Age warfare could be ill-suited for the new

systems and there is a need to move toward network-oriented models. Militaries will be forced to 'delayer' their rigid and many-layered hierarchies to create information-based network structures that will facilitate diverse and dispersed actors to operate together across greater distances than before.¹⁴ This could see the development of smaller, extremely mobile and independent units replacing unwieldy divisions as basic combat units, capable of influencing large areas of terrain with the ability to switch rapidly from defensive to offensive operations. Examples are *Combat Groups*¹⁵, *Combat Task Teams*¹⁶ or *Hunter Warrior Teams*.¹⁷

To support networked structures, militaries will have to enhance command and control methodologies that increase autonomy at the lower levels of command¹⁸ while preventing micro-management. The increased tempo of future warfare necessitates the use of initiative at lower command levels and the decentralisation of decision-making.¹⁹ On the other hand, procedures to deal with information overload must be developed if commanders are to operate effectively without being confused and frustrated by the profusion of information.²⁰

Information Dominance and the SAF

In sum, information dominance will impact on the SAF in two areas.

- The SAF will have to continually review its organisational structures and may have to restructure its currently pyramidal-bureaucratic hierarchy to a flatter and more network-based system.
- Doctrines have to be developed for the future battlespace that will become more chaotic and complex, with tactical actions having direct strategic effects. While C4ISR technologies will assist in the gathering and dissemination of information, the SAF will need new tools and training systems to facilitate more decentralised decision making, and at the same time assisting commanders to overcome information overload in higher tempo environments while synchronising activities of smaller and more independent forces.

Disengaged Combat²¹

Disengaged combat complements information dominance by enabling militaries to conduct operations at a healthy distance from their enemy.²² One component is *precision strike* - the ability to locate and destroy high-value, time-sensitive targets while minimising collateral damage and enemy counter-strikes.²³ A second component that is growing in importance is *information operations (IO)* - actions taken to affect adversary information and information systems while defending friendly information and information systems.²⁴

Precision Strike

In modern high-intensity wars, close contact is becoming increasingly lethal. Faster, more accurate and more destructive precision-guided munitions (PGMs) supported by the future battlefield's dense grid of sensors will make targeting more effective.²⁵

Precision strike is also driven by society's desire that warfare should be pursued with minimum bloodshed and collateral damage. The progress of civilisation has generally served to water down casualty tolerance²⁶, and sensitivity to casualties is increasingly seen as a friendly centre of gravity.²⁷

While 'closing with' the enemy will remain fundamental to land warfare, militaries will need new doctrines to maintain offensive capabilities against the threat of precision weapons. 'Minimum mass tactics' is a possible answer, emphasising small combined-arms forces, equipped with advanced long-range sensors and PGMs, designed to locate and hit the enemy from a distance, while using manoeuvre to achieve dispersion and effect.²⁸ This decreasing reliance on large heavy forces is in line with the findings under information dominance above.

This will be supported by doctrinal enhancements emphasising concentration of fires instead of concentration of mass. There will be less need for units to be massed together to achieve their effect. Instead, the combination of precision weapons and advanced C4ISR capabilities will allow widely dispersed forces to focus their fire on specific points.

Additional developments include more non-linear doctrines for combat. Future doctrine will have to take on more of Sun Tzu's 'deceptive and formless' principle of warfare.²⁹ Linear doctrines will not cope effectively with precision strikes. Instead, 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.

Information Operations (IO)

IO are perhaps the most extreme form of disengaged combat and involves protecting C4ISR systems and personnel from physical, psychological and electronic attack and deception, while actively attacking and degrading the enemy's C4ISR systems.³⁰

The growing interconnectedness of national and international communications and banking (and other) systems suggest that one clear challenge is to defend against attacks on friendly information systems. Computer network attacks, meant to disrupt or destroy information in computer networks through hacking, virus implanting or chipping, are increasingly seen as a potential threat not only to the military, but also generally to the entire national infrastructure.³¹ While this goes beyond the traditional responsibilities of national defence forces, IO against national socio-economic systems and infrastructure could make it a future weapon of mass destruction.

Another consequence of IO is the need to adapt RMA thinking to the much broader social change being brought about by the information revolution. Within such a strategic framework, it seems somewhat artificial to consider the scope and impact of IO in a purely military context. IO will broaden the national security agenda to cope with both foreign and domestic information threats across a wider spectrum of conflict.

At the military level, IO's threat and potential may encourage the development of an information corps.³² This may consist of personnel with very different qualities and personal characteristics from traditionally military people. Such an organisation will help integrate IO functions across services and encourage innovation in this area. It could maintain intelligence and attack plans designed to collapse an enemy's information networks, plot computer virus attacks, and seek ways to deny critical information to the enemy.

Disengaged Combat and the SAF

Taking both precision strike and IO together, disengaged combat may provide the means to focus our strengths against enemy weaknesses resulting in a new paradigm of warfare based not on attrition, but on the ability to paralyse and shock.³³ For the SAF, certain trends highlighted under information dominance are reinforced by disengaged combat. Firstly, the trend of smaller, more independent forces is reinforced in that they are more lethal when given access to precision weapons, and precision strikes effectively encourage dispersion to achieve force protection. Similarly, we could see the development of new Information Age organisations within the SAF like the information corps. Secondly, the SAF will need to develop doctrines to fight in a non-linear battlefield. This will have the greatest effect on logistical support of manoeuvre forces, as there may be no secure lines of communications. Thirdly, the impact of non-technological factors is beginning to take prominence. In the future, the SAF will have to increasingly factor in society's intolerance towards casualties and capitalise on freely available civilian technology to support IO.

Synergy³⁴

Synergy is the ability of different services, branches, and countries to fight effectively together and marshal their unique capabilities into a whole that is greater than the sum of its parts. The RMA is only revolutionary when the various aspects work together, increasing the emphasis on joint and coalition operations.

Jointness

Jointness is intimately related to the information revolution. The faster and more complicated war becomes, the more the need for tighter and continuous cooperation among the services.

The challenge will be to minimise inter-service rivalry while raising inter-operability.³⁵ Questions of which service will perform which role, mission or function should give way to a more fundamental question: how can the capabilities of the various services be marshalled effectively? Military planners must discard the notion that missions belong, in any meaningful sense, to one or another service.³⁶

As an effect on military organisations, jointness will see more forces incorporating land, sea, air and space elements in the future, and the peacetime training of these forces will become more frequent.³⁷ A further step is for joint headquarters to remove component command, creating truly joint commands to operate jointly on a continual basis.³⁸ The logical conclusion will be to do away with service divisions, creating a fully joint 'purple' military organisation, perhaps along the lines of the US Marine Corps.

Moves towards more joint procurement organisations have begun given that the difficulty of logistics support for major sophisticated platforms can be alleviated with joint development (for example, the new generation Joint Strike Fighter). However, expanding this to combat forces has had a mixed response. Possibly, this resistance is due to the strong service cultures and the traditions of inter-service rivalry. While the RMA can point logically to 'purple' organisations, perhaps the current military culture needs to be changed significantly before this can happen (this is elaborated under military culture below).

Multinational/ Coalition Warfare

An even tougher difficulty than promoting synergy among military services is doing the same thing within multinational coalitions. With the RMA widening the spectrum of conflict, together with resource constraints, no single nation will be capable of maintaining armed forces that can deal with everything. Coalition operations are becoming more challenging even as they become more necessary.³⁹

With the high cost in introducing RMA technologies, the RMA may see developed nations concentrating on the higher-end of the conflict spectrum, where it can use its Third-wave technologies best while forming 'strategic alliances' to cope with First and Second-wave conflict. Countries may therefore meet future crises with 'modular coalitions' where each ally provides specialised military forces and technologies.⁴⁰ Just as the future may see 'purple' militaries, formalised multinational forces may be the way forward as national interest gives way to cooperation between countries.

Synergy and the SAF

The RMA's prediction of faster and more complex warfare heightens the need for closer cooperation among forces. Firstly, the SAF will need work to minimise entrenched service loyalties, and develop as a seamless joint organisation. However, to fully realise this, the SAF will, secondly, have to significantly develop joint doctrine in order to bridge any inter-operability gaps between the services. Finally, as the SAF begins to contribute more in UN operations, it will need to also work on doctrines and systems to facilitate operating with other multinational partners.

Civilianisation of War

Finally, the RMA points in the direction of the civilianisation of war, the blurring of the line between military and civilian endeavours. This interaction between the military and civilian spheres in the *information age* is the reason why the Tofflers' definition of the RMA was adopted earlier i.e. war is becoming less of an exclusive 'military' enterprise.

The rate of technological change is fast eroding the military-civilian boundary. When war's primary focus was killing, its main killing tools were built exclusively for military use. War technology was therefore self-generating. Today, the trend is reversed: the RMA is being pushed, not by military but by commercial developments. Military power belongs to those who best master the civilian technologies and economics of building and running information grids, and who keep ahead of improvements in computers, communication systems, satellites and sensors. Future militaries will be increasingly dependent on civilian contractor support.⁴¹ Similarly, because of stifling military procurement systems, civilian systems are far outpacing their military equivalents and superior and cheaper commercial-off-the-shelf (COTS) products will be more common on the future battlefield.

However, the civilianisation of conflict will also open countries up to new security threats that militaries may not have encountered in the past. Civilian computer hackers could cripple information systems with viruses, while civilian satellite operators could provide potential adversaries with accurate imagery material. Military outsourcing to civilians compounds this problem, especially in communication systems. It has been estimated that among advanced armed forces, more than 70% of the military's information technology transactions are outsourced to private vendors.⁴²

The proliferation of civilian contractors and civil agencies within the area of operations and the political complexity attendant on all military operations combine to make civil-military integration a key component of future conflict.⁴³ It calls for closer coordination among military forces and international relief organisations.

Non-lethal weapons will accelerate this trend toward civilianised warfare. Supporting precision strike's aim to do as little collateral damage as possible, non-lethal capabilities aim to minimise killing of the enemy and will be especially important in peacekeeping and counter-insurgency warfare.⁴⁴ The enemy could be denied the use of roads through the use of greasy substances rather than mines and the circuitry in their computers targeted with electromagnetic bursts.

Civilianisation of War and the SAF

Civilianisation of war could see militaries lose even more of their monopoly on 'force'.⁴⁵ For the SAF, it will firstly have to increasingly adopt a wider national security agenda with the information revolution creating more far-reaching security problems than just military defence. The current *Singapore Total Defence* policy may see greater emphasis placed on non-military defence i.e. *psychological defence, economic defence and social defence*. Secondly, in line with this, the SAF will have to organise itself to accommodate more civilians, non-lethal weapons and COTS products. Thirdly, there will be a need for doctrinal expansion in areas of civil-military cooperation and for tighter integration with civilian contractors and outsourced agencies.

A Revolution in Military Culture

Up to now, the essay has examined individual RMA concepts. However, taken together, these concepts envisage that many rapid and difficult changes will have to be undertaken by militaries simultaneously for them to fully realise the RMA's potential. The ease with which militaries adapt to change depends crucially on military culture, the organisational collective 'personality' that defines and constrains its behaviour very strongly. Militaries, comfortable to working in stability, will be confronted with a paradigm shift in military culture in order to operate effectively under conditions of continuous change, bordering on chaos.⁴⁶

The military's control culture that is resistant to change, must take on new values of creativity and flexibility.⁴⁷ Militaries are often sceptical of peacetime creative ideas and only resort to wartime battlefield

innovation. An example from a previous RMA is the British military's slowness to recognise, after the Salisbury Plain experiments, 'the revolutionary potential of armoured mobile warfare and the new tool for controlling this fluid, fast-moving battlefield: the wireless radio'.⁴⁸ To break out of this mindset, militaries could foster creativity by creating special teams like the US Army's *Louisiana Manoeuvres Task Force*, insulated from external interference, to challenge entrenched mindsets and develop innovative solutions. Additionally, the recruitment and training of soldiers who can think 'out-of-the-box' will enhance operations in the complex battlefields of tomorrow.⁴⁹ Shrinking defence dollars will also mean that improvements to future defence capabilities will hinge on creative solutions in defence procurement, work practices and processes.

Like creativity, flexibility is relatively alien in today's rigid military culture.⁵⁰ Without flexibility, any attempts to foster creativity will be stifled. There are risks in experimentation, and mistakes will be made as RMA ideas are tested. Flexibility means tolerating mistakes and being less quick to dismiss new ideas. This persuades people to try harder in developing innovative solutions. In peacetime, the use of After-Action Reports may blunt egos but can hasten the absorption of RMA lessons as others in the organisation can learn from another's mistakes without necessarily going through the entire painful process. Its success is dependent on the leadership's tolerance of mistakes in the learning process, and for these lessons to be shared readily.⁵¹

Military Culture and the SAF

The RMA's concepts can be a reality in the SAF only if continual adoption of substantive transformations that optimise its ability to realise those concepts occur. Unfortunately, militaries are large bureaucracies that are not only difficult to change but are also designed not to change with potent cultural barriers that obstruct change.⁵² When the individual concepts presented earlier confront present military paradigms as a whole, the RMA, interacting with the RPA, in essence calls for a RMC, a *revolution in military culture*. The challenge is to transform any change-resistant cultures within the SAF into creative and flexible ones, thereby forming the backbone of a 'Learning Organisation', one that "is continually expanding its capacity to create its future".⁵³

Conclusion

So how revolutionary is the RMA for the SAF? The preceding discussion of four major RMA concepts clearly shows that they pose important challenges to existing military paradigms. Several important deductions stand out.

Firstly, there will be a need to continually re-structure the SAF for the Information Age. Increased networking and more common situational awareness will force 'de-layering' of bureaucratic Second wave structures, and the introduction of smaller, more mobile and more independent units. Traditional service divisions will be eroded and may eventually disappear, resulting in a seamless joint SAF. Similarly, the SAF could be forced to work with more civilians in its establishment and develop new organisations, while phasing out older ones.

Secondly, current doctrinal mindsets will have to change. Society's sensitivity to casualties, combined with the threat of precision weapons, will drive new doctrines like 'minimum mass tactics', non-linearity and concentration of fires. Joint and multinational doctrines will gain importance with more joint and coalition warfare. The SAF will have to develop doctrines that address new warfare areas of IO and non-lethal weapons and focus on new ways to use them effectively while protecting against them as potential new threats.

Thirdly, the RMA effectively broadens the spectrum of conflict and challenges the SAF's traditional role at the forefront of warfare. Non-military factors like more COTS products and civilian contractors on the battlefield will blur the civilian-military line in conflict. The growing interconnectedness of national, international and military information systems will see more IO at the strategic level and could eventually place civilians at the

frontline of future conflict. To remain relevant in the Information Age, the SAF will have to continually examine its role and mission in the context of a rapidly widening spectrum of conflict.

Finally, the combination of the major RMA concepts points to the need for the SAF to develop an organization culture that will maintain its edge in a climate of increasingly continuous change and complexity. The key to the RMA is that it engenders innovative thinking and seeks to translate the RMA concepts into coherent and practical policies. The SAF should explore ways to improve flexibility and creativity so as to continually transform itself, or else, it will fall into the trap of being unprepared for the future changes of the ongoing RMA.

Many of the concepts above are already being seriously examined by armed forces around the world. Those accustomed to relying on certain 'unchanging truths about war' may undoubtedly reject some of the suggestions offered above. And perhaps they will be right. However, this essay has tried to convey something of the possible sweep and momentous importance of the trends that are now at work in future conflict. It is based on the conviction that, whether or not every element of its long-range thinking is correct, militaries that wish to remain relevant in the future ignore these trends at their peril.

Endnotes

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

2 Tilford, E.H. 1998, *Halt Phase Strategy: New Wine in Old Skins... with Powerpoint*, US AWC, SSI, Carlisle Barracks, PA, 23 Jul 1998, p iii.

3 Cooper, J.R. 1994, *Another View of the Revolution in Military Affairs*, Carlisle Barracks, PA, US AWC, SSI, 15 Jul 1994, p 27.

4 Mazarr, M.J. et al. 1993, *The Military Technical Revolution: A Structural Framework*, Centre for Strategic and International Studies, March 1993.

5 Roberts, M. 1955, 'The Military Revolution, 1560-1660', lecture given in 1955, reprinted in Roberts, M. 1967, *Essays in Swedish History*, Weidenfeld and Nicholson, London.

6 Bunker, R.J. 1996, 'Generations, Waves, and Epochs Modes of Warfare and the RPMA', *Airpower Journal*, Spring 1996, pp 18-23.

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

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

10 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.

11 Cebrowski, A.K., 1997, 'Network-Centric Warfare: A Revolution in Military Affairs', presentation to the 1997 Technology Initiatives Game, 8 Sep 1997. For details on the US Marine Corps' demonstrations in Ex Kernal Blitz 1999, see Belen, F. 1999, 'Littoral Lightning', *Armed Forces Journal International*, July 1999, p 14.

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

13 Jablonsky, D. 1994, 'US Military Doctrine and the Revolution in Military Affairs', *Parameters*, Vol XXIV, No 3, Autumn 1994, pp 24-25, gives a far more detailed analysis of this view of the 3 levels of warfare.

14 'The Future of Warfare', *The Economist*, 8 March 1997, p 24.

15 Macgregor, D.A., 1997, *Breaking the Phalanx a new design for Landpower in the 21st century*, CSIS, Washington (D.C.), p 74.

16 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.

17 Schmidt, J.F. 1998, 'A Critique of the Hunter Warrior Concept', *Marine Corps Gazette*, June 1998, p 14.

18 Krulak, C.C. 1999, 'Organising for Chaos on the Littorals: Force Structure Planning Group 1999', *Marine Corps Gazette*, Mar 1999, pp 20-24.

19 Sullivan, G. & Dubik, J. 1993, *Land Warfare in the 21st Century*, US AWC, SSI, Carlisle Barracks, PA, 1993, p 19.

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

21 Mazarr, M. 1994, op cit, p 23. This is similar to the concept of Precision Engagement given in Chairman of the Joint Chiefs of Staff, 1997, op cit, p ii.

22 Disengaged Combat forms the third component (weapon systems) of Network Centric Warfare (NCW), while information dominance focused on the first 2 components ie. sensor systems and command support systems see Australian Army 1998, *LWD-1: The Fundamentals of Land Warfare*, Doctrine Wing, CATDC, pp 4-15 to 4-16.

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

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

25 Libicki, M. 1992, 'Silicon and Security in the 21st Century', *Strategic Review*, Vol 20, No 3, Summer 1992, pp 63-64.

26 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.

27 Harvey, J. 1995, 'The RAAF and the Revolution in Military Affairs', *Journal of the Royal United Services Institute of Australia*, Vol 16, No 1, Nov 1995, p 26.

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

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

30 Australian Army 1998, op cit, p 6-13.

31 Glabus, E.M. 1998, 'Metaphors and Modern Threats: Biological, Computer, and Cognitive Viruses', in Matthews, L.J. (ed) 1998, *Challenging the United States Symmetrically and Asymmetrically: Can America be Defeated?*, US AWC, SSI, Carlisle Barracks, PA, pp. 195-214

32 Libicki, M. & Hazlett, J. 1993, 'Do we need an Information Corps?', *Joint Force Quarterly*, No 2, Autumn 1993, pp 88-97.

33 Mahnken, T.G. 1995, 'War in the Information Age', *Joint Force Quarterly*, Winter 1995-96, p 40.

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

- 35 Szafranski, R. 1996, 'Interservice Rivalry in Action', *Airpower Journal*, Summer 1996, pp 48-59.
- 36 Owens, W. 1993, 'Living Jointness', *Joint Force Quarterly*, No 3, Winter 1993-94, pp 7-14.
- 37 Miller, P.D. 1993, 'A New Mission for Atlantic Command', *Joint Force Quarterly*, No 1, Summer 1993, pp 80-87.
- 38 Ankersen, C.P. 1998, 'A Little Bit Joint - Component Commands: Seams, Not Synergy', *Joint Force Quarterly*, Spring 1998, p 118.
- 39 Freedman, L. 1998, 'The Revolution in Strategic Affairs', *Adelphi Papers*, No. 318, International Institute for Strategic Studies, London, OUP, April 1998, p 37.
- 40 Thomas, K. 1997, op cit, p 143.
- 41 Klinger, G. 1996, Office of the Defence Under Secretary of Defence/Space, at the *Command and Control Research Symposium*, Naval Post-Graduate School, Monterey, CA, 25-28 June 1996
- 42 Silverberg, D. 1997, 'Crossing Computing's Cultural Chasm', *Armed Forces Journal International*, Feb 1997, pp 38-39.
- 43 Australian Army 1998, op cit, p 4-13.
- 44 Aftergood, S. 1994, 'The Soft-Kill Fallacy', *The Bulletin of the Atomic Scientists*, Vol 50, No 5, Sep/Oct 1994, p 40.
- 45 Toffler, A. & Toffler, H. 1993, op cit, pp 87-220.
- 46 Krulak, C.C. 1999, 'Organising for Chaos on the Littorals: Force Structure Planning Group 1999', *Marine Corps Gazette*, Mar 1999, p 21.
- 47 O. Dunivin, K. 1994, 'Military Culture: Change and Continuity', *Armed Forces and Society*, Vol 20, No 4, Summer 1994, pp 531-547.
- 48 Bay, A. 1995, 'Military Creativity', *Army*, Association of the US Army, Jan 1995.
- 49 Rhodes, J.E. 1998, 'Every Marine an Innovator', *Marine Corps Gazette*, Jan 1998, pp 40-41.
- 50 Vandergriff, D.E. 1998, 'Without the Proper Culture: Why our Army cannot practice Manoeuvre Warfare', *Armour*, Jan-Feb 1998, pp 20.
- 51 A discussion of how the AAR is an effective flexible learning tool can be found in Sullivan, G.R. & Harper, M.V. 1996, *Hope is Not a method: what business leaders can learn from America's army*, Times Business, New York, chapter 11.
- 52 Rosen, S.P. 1991, *Winning the Next War: Innovation and the Modern Military*, Ithaca, NY, Cornell University Press, p 5.
- 53 Senge, P. 1990, *The Fifth Discipline: The Art and Practice of Learning Organisations*, New York, Doubleday, p 14.

Bibliography

Aftergood, S. 1994, 'The Soft-Kill Fallacy', *The Bulletin of the Atomic Scientists*, Vol 50, No 5, Sep/Oct 1994.

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

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

Bay, A. 1995, 'Military Creativity', *Army*, Association of the US Army, Jan 1995.

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

Bunker, R.J. 1996, 'Generations, Waves, and Epochs Modes of Warfare and the RPMA', *Airpower Journal*, Spring 1996.

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

Chairman of the Joint Chiefs of Staff, 1997, *Concept for Future Joint Operations: Expanding Joint Vision 2010*, May 1997.

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

Cooper, J.R. 1994, *Another View of the Revolution in Military Affairs*, US AWC, SSI, Carlisle Barracks, PA 15 Jul 1994.

Freedman, L. 1998, 'The Revolution in Strategic Affairs', *Adelphi Papers*, No. 318, International Institute for Strategic Studies, OUP, London, April 1998.

Harvey, J. 1995, 'The RAAF and the Revolution in Military Affairs', *Journal of the Royal United Services Institute of Australia*, Vol 16, No 1, Nov 1995.

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.

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

Klinger, G. 1996, Office of the Defence Under Secretary of Defence/Space, at the *Command and Control Research Symposium*, Naval Post-Graduate School, Monterey, CA, 25-28 June 1996.

Libicki, M. 1992, 'Silicon and Security in the 21st Century', *Strategic Review*, Vol 20, No 3, Summer 1992.

Libicki, M. & Hazlett, J. 1993, 'Do we need an Information Corps?', *Joint Force Quarterly*, No 2, Autumn 1993.

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

Krulak, C.C. 1999, 'Organising for Chaos on the Littorals: Force Structure Planning Group 1999', *Marine Corps Gazette*, Mar 1999.

Macgregor, D.A., 1997, *Breaking the Phalanx A New Design for Landpower in the 21st century*, CSIS, Washington (D.C.).

Mahnken, T.G. 1995, 'War in the Information Age', *Joint Force Quarterly*, Winter 1995-96.

Matthews, L.J. (ed) 1998, *Challenging the United States Symmetrically and Asymmetrically: Can America be Defeated?*, US AWC, SSI, Carlisle Barracks, PA.

Mazarr, M.J. et al. 1993, *The Military Technical Revolution: A Structural Framework*, Centre for Strategic and International Studies, Washington (D.C.), March 1993.

Mazarr, M. 1994, *The Revolution in Military Affairs A Framework for Defence Planning*, Carlisle Barracks, PA, US AWC, SSI, 1994.

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

O. Dunivin, K. 1994, 'Military Culture: Change and Continuity', *Armed Forces and Society*, Vol 20, No 4, Summer 1994.

Owens, W. 1993, 'Living Jointness', *Joint Force Quarterly*, No 3, Winter 1993-94.

Rhodes, J.E. 1998, 'Every Marine an Innovator', *Marine Corps Gazette*, Jan 1998

Roberts, M. 1967, *Essays in Swedish History*, Weidenfeld and Nicholson, London.

Rosen, S.P. 1991, *Winning the Next War: Innovation and the Modern Military*, Cornell University Press, Ithaca, NY.

Sawyer, R.D. 1996, *The Complete Art of War Sun Tzu & Sun Pin*, Westview Press, Boulder, Colorado.

Schmidt, J.F. 1998, 'A Critique of the Hunter Warrior Concept', *Marine Corps Gazette*, Jun 1998.

Senge, P. 1990, *The Fifth Discipline: The Art and Practice of Learning Organisations*, Doubleday, New York.

Silverberg, D. 1997, 'Crossing Computing's Cultural Chasm', *Armed Forces Journal International*, Feb 1997.

Sullivan, G. & Dubik, J. 1993, *Land Warfare in the 21st Century*, US AWC, SSI, Carlisle Barracks, PA, 1993.

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

Sullivan, G.R. & Harper, M.V. 1996, *Hope is not a method: what business leaders can Learn from America's army*, New York, Times Business.

Szafranski, R. 1996, 'Interservice Rivalry in Action', *Airpower Journal*, Summer 1996.

Thomas, K. (ed) 1997, *The Revolution in Military Affairs: Warfare in the Information Age*, ADSC, Canberra.

Tilford, E.H. 1998, *Halt Phase Strategy: New Wine in Old Skins... with Powerpoint*, US AWC, SSI, Carlisle Barracks, PA, 23 Jul 1998.

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

'The Future of Warfare', *The Economist*, 8 Mar 1997.

Van Crevald, M, 1989, *Technology and War*, New York, Free Press.

Vandergriff, D.E. 1998, 'Without the Proper Culture: Why our Army cannot practice Manoeuvre Warfare', *Armour*, Jan-Feb 1998.



MAJ Seet Pi Shen is a Guards Officer by training and is currently an S3 in Singapore Infantry Brigade (SIB). He graduated with a BA (2nd Class Upper Honours) in Politics, Philosophy and Economics from Oxford University in 1992 and obtained a Master's in Defence Studies, University of Canberra, in 1999. MAJ Seet also attended the Australian Army Command and Staff Course (Fort Queenscliff) 1999.

Innovation in Military Organisations

by LTA Choy Dawen

There is something about the Year 2000 that inspires contemplation and reflection, even though its significance is artificially created by our use of a base ten counting system and the arbitrary start date from one of the many religions -- worse, the millennium does not even officially start till 2001 so a lot of philosophising has been premature. Nevertheless, this has not stopped a lot of people from thinking aloud about the coming changes that will radically affect our lives. Thus, in the spirit of the new millennium and all the talk about a revolution in military affairs (RMA), this article will attempt to survey what academics have learnt over the many years about innovation in military organisations. In so doing, we may get a glimpse of what policies may be most appropriate towards fostering innovation.

The prognosis of conventional organisational theory is not heartening. As with other large bureaucracies of concomitantly substantial inertia, militaries are generally viewed to be resistant to change.¹ Worse, positions of influence within the military can only be attained after years of climbing through the ranks, preventing the infusion of fresh perspectives through the appointment of 'outsiders' into the decision-making echelons. Consequently, there have been many examples where militaries have failed sometimes spectacularly to adapt to new technology or political circumstances, such as the persistence of the horse cavalry in European armies even past World War I², and the 'cult of the offensive' prior to World War I that blinded many to the obvious defensive potential of machine guns and trenches.³ Such failures have given rise to the oft-quoted adage that 'militaries are doomed to fight the last war'.

And yet, even if militaries do sometimes fail at innovation, their failures can hardly be for lack of trying. Militaries have historically been extremely supportive of almost any idea or invention that held promise of greater success in war witness their speed at embracing the aeroplane, armoured vehicle, universal conscription, combined arms tactics, and computer/information technology. This is only to be expected of an organisation whose members live or die by the decisions it makes, and is thus interested in anything that promises an advantage in combat. Furthermore, militaries have on occasions innovated successfully, as demonstrated by the formation of the highly effective armoured Panzer corps and the development of Blitzkrieg tactics by the Germans during World War II, even as their French contemporaries failed to develop a coherent doctrine for employing the tank. The appropriate question thus is not whether militaries innovate but rather why and when. Under what circumstances and conditions do militaries adapt successfully to change? Why are some militaries more successful than others in developing and embracing new doctrines or technology?

To begin the task of analysing these questions, this article will first discuss the human and technological environment in which military innovation takes place, since these environmental factors will profoundly influence the nature of innovation. It will then introduce three major theories of military innovation that have been advanced by scholars in recent years, and show how they relate to the environmental factors discussed in the first section. Finally, it will extract, from these three theories, guidelines for promoting innovation, although our present understanding of innovation in military organisations is still too limited to offer many concrete suggestions.

The Military Profession

As Samuel Huntington argues in his book, *The Soldier and the State*⁴, the modern military officer is a professional man.⁵ He holds unique expertise in the art of managed violence, a skill that distinguishes him from his civilian counterpart even if they were holding similar vocations as pilots, engineers, intelligence agents, or communications specialists. The job of the military officer is successful armed combat, and it is towards this overarching objective that other tasks and roles are subsumed. Furthermore, as with other professions such as doctors and lawyers, a commission into the professional officer corps is selective, in

much the same way that doctors are only allowed to practise upon receiving a license. Entry is also restricted to the lowest level of the corps, that of the second lieutenant.

The professional nature of the officer corps, and its position of dominant influence within the military, therefore excludes an important source of innovation available to other types of organisations although not entirely impossible, it is extremely difficult to introduce 'outside' opinion into the military's decision-making process. After all, high-ranking senior officers typically make most of the important decisions about innovation, and it is impossible to earn such a senior rank without going through the bottom-up route all the way from second lieutenant. However, by the time the lowly second lieutenant, fresh with ideas for reform and improvement, rises to a position of command and influence, his views are likely to have been shaped and modified by his long period of service. It then becomes arguable how 'fresh' his perspective remains, which has led some scholars to believe that innovation in the military is necessarily gradual and evolutionary.

The other option is to bring in civilian consultants into the decision-making process, but the utility of this option is limited by the monopoly the officer corps holds on the art of managing violence. Innovation within the military must ultimately translate into more effective armed combat against an adversary; thus even if the civilian consultant possessed superior knowledge in his own field of expertise, his credibility in adapting his knowledge for the specific requirements of the military remains in doubt. It should come as no surprise then that civilians play significant roles only in areas of less direct relevance to combat, such as human resource management, budgeting and finance. Even when they are involved in the research and development (R&D) of weapon systems, they are unlikely to hold strategic decision-making positions; more often, they are simply fulfilling specific operational requirements set down by uniformed program managers who have already decided what they want. And, of course, civilians are almost certainly not involved in the development of tactics and doctrines.

The net result is that revolutionary change is at times difficult to achieve due to established doctrines or traditions that cannot be easily erased by the very people whose careers and lives depend on them. Unmanned combat air vehicles (UCAVs) may one day prove flexible and potent enough to replace the ubiquitous manned fighter, but will their introduction be easy with pilots holding all the top positions in the Air Force? Will troops who have hitherto entrusted their lives to the availability of close air support by manned fighters readily switch their support over to unthinking air vehicles piloted by human operators (maybe even computers someday) hundreds of miles away? It is of course not impossible for revolutionary change to occur, for navies had quickly embraced aircraft carriers within the space of a generation, and armies had developed tanks and their employment doctrine between the two World Wars, but certainly such discontinuous changes in ways of fighting do not usually come easily nor quickly.

The Innovation Environment in the Military

The technological environment in which military innovation takes place is also rather unique. To begin with, short of engaging in a real war, there is often no way to objectively measure whether an innovation (such as a new weapon or a new war fighting doctrine) will improve the odds of success in war. Naturally, this makes the task of identifying the right innovations to pursue highly arduous and subjective. In recent decades, techniques such as operations research have been applied to make this process more scientific and rigorous, but their effectiveness is limited; innovation, after all, is about predicting the future.⁶

Furthermore, some militaries are also in the awkward position of being both the only supplier and the sole customer. For smaller militaries that principally obtain their equipment and technology from foreign suppliers this is not a big problem, but for larger militaries on the cutting edge of technology, this presents a hurdle to revolutionary innovations. The typical technology development process begins with the drafting of an operational requirement document that details the reasons for wanting to acquire the new equipment. Upon approval, a more comprehensive document is then written up to specify the features desired in the new technology/equipment/weapon. Interested defence companies can put up proposals and bid for the contract based on this document (sometimes known as the specific operational requirement). Changes can be made to the original specification, but usually the amendment process is lengthy and complicated.⁷ In this way, the military is both the supplier, since it determines the essential features of the product and

provides the funds for development, as well as the customer, since the finished product will be bought by the military. The defence companies that perform the R&D and eventually manufacture the product are in reality no more than agents that carry out the guidelines of the supplier the military itself.

This distinctive consumer-producer relationship presents many interesting implications. The lack of consumer-producer separation first results in the loss of yet another independent, 'outside' source of innovation. Consumers do not always know *a priori* what they want; occasionally, they discover uses that they have never thought of before in an unanticipated new product. One need look no further than the Internet to see this phenomenon in action the World Wide Web was not invented because consumers demanded it, but rather developed and matured in the academic and scientific circles until the mid-1990s when graphical user interfaces made it user-friendly enough for the average person. As for the military world, it is also easy to find examples of neglected technology that later proved valuable. For years before World War II, the British government neglected Frank Whittle's attempts to design a jet engine that would make aircraft go faster and higher, thinking that jets would not give appreciable performance gains over the more mature turboprop. They were fortunate that the Germans similarly misjudged the utility of the jet, or else the Allies might have found their fighters severely outclassed.

The dual role of the military as both producer and consumer thus reduces the possibility of producer-led innovation, especially nowadays when military R&D is extremely protracted and expensive. In the past, it was possible to find company-funded development of military equipment by defence companies on their own initiative, but even so these were usually variants of something already developed for (and paid by) the military, such as the F-5A *Freedom Fighter* (which grew out of the T-38 *Talon* trainer) and the F-15E *Strike Eagle* version of the already popular F-15 fighter. Nowadays, with development cycles stretching into the decade and programmes costing as much as US\$19 billion for the F-22, private company-funded ventures are even more unlikely. We will probably find that, increasingly, the military will only get exactly what it asked for sometimes less (due to budget cuts or over-ambitious specifications), but unlikely more.⁸

This situation is exacerbated by a second problem, probably best summarised by the phrase "the good enough is the greatest enemy of the better". During the V-22 *Osprey's* now 20-plus years of development (it has yet to reach operational status), critics frequently argued that existing or upgraded versions of current helicopters could adequately fulfil the operational requirements of the US Marine Corps without the need for this new, expensive, and risky tilt-rotor aircraft. Similar arguments have also been levied against the F-22, since current US fighters such as the F-15, F-16 and F-18 are still regarded as amongst the world's best even though their designs are more than 20 years old.⁹ Why waste money building something better when the existing one will suffice?

Taken together, the technological environment for military innovation can frequently be inhospitable towards innovation. Without objective measures of effectiveness that can compellingly demonstrate the utility of revolutionary ideas, militaries often fall back on combat experience as a proxy that invariably disadvantages the unproven innovation. And when effective tactics and equipment already exist to handle foreseeable threats, the drive to innovate and upgrade can sometimes be wanting, leading to stagnation in weapons and tactics.¹⁰ Producer-led innovation can occasionally fill in the gap Whittle went ahead with his jet engine research despite the absence of official government interest but this is becoming more and more difficult in the military due to increasing R&D costs.

Three Theories of Military Innovation

Nevertheless, despite the pessimistic picture painted above, the military has had successful innovations. What then, explains these successes? Social and political scientists, as well as military historians and analysts, have spent many decades studying innovation in militaries¹¹ and, out of the many resulting case studies and papers, three major theories of innovation have emerged.

The first, associated with Stephen Rosen, posits that revolutionary innovation in the military takes place mostly from within that is to say, only uniformed personnel are able to introduce effective change into the system.¹² Using case studies such as the development of the air defence network in Britain (1916-1940), the

introduction of carrier aviation in the US (1918-1943), and the creation of helicopter airmobility in the US (1944-1965), he has found that civilians play only minor roles in innovation; generally, it has been visionary soldiers who have been the most effective champions of change. The basis for this theory stems from the nature of the military profession, which restricts important decision-making to senior ranking officers who have spent many years within the system before rising to such positions. As mentioned earlier, civilians can only play supporting roles due to their lack of familiarity with military operations.¹³ However, because officers tend to have been in the military for a long time before reaching senior positions, their views tend to be shaped more by their former experiences than by current circumstance.

As a result, this theory implies that revolutionary change, while possible, takes place only slowly as the older generation of officers is replaced by younger ones that have different beliefs and visions. Still, it is possible to accelerate the process by judicious manpower and career management. Fast-track career paths can be introduced so that there is quicker turnover in ideas and viewpoints at the top echelons. New vocations and career paths can be created so that junior officers practising a new way of warfare have a chance at rising to the top and introducing effective change in the military. In Rosen's view, peacetime military innovation is thus primarily a political process that involves redistribution of power and resources between the different services, between the various communities within those services (such as infantry, armour, artillery and engineers), as well as between the older and younger generations of officers.

A second theory, articulated by Barry Posen, argues that major innovation in the military takes place largely under the prodding of civilians who are free from the emotional and psychological baggage that accompanies a lifetime of professional service in the military.¹⁴ Drawing examples from France, Britain and Germany during the interwar years between World Wars I and II, he finds that within the short term, turnover in revolutionary ideas within the military is so slow that fresh perspectives from civilians are required to prompt innovation in doctrine and weapons. Even though civilians have little detailed knowledge of military operations, they are able to broadly influence military doctrine; after all, the military ultimately serves the political masters of the state, so civilians are not without decision-making power in the military.¹⁵ Furthermore, civilians should and do take an interest in military doctrine because it is a vital component of the state's overall grand strategy (which involves diplomatic, economic and other components). Unfortunately, senior military commanders are not always in touch with the state's grand strategy, since they may have limited awareness of the other non-military components, so it becomes necessary for civilians to step in and ensure that military doctrine remains in sync. This theory thus implies that civilian oversight of military affairs is important to innovation, as it imparts an independent perspective to how military operations should be conducted.

The third theory of innovation, advocated by Owen Cote and Harvey Sapolsky, believes that inter-service competition is a healthy catalyst of innovation.¹⁶ The various services all compete for influence and the same limited defence budget, and this competition spurs each service to come up with innovations to overtake the others. The US Navy's pursuit of the *Polaris* submarine-launched ballistic missile programme, for example, was important in breaking the US Air Force's monopoly on delivery platforms for nuclear weapons, a monopoly which had allowed it to gain a disproportionate share of the US defence budget. Without the stimulus of competition with the Air Force (and to a lesser extent, the Army), the Navy might well have ignored ballistic missiles altogether, for internal resistance to *Polaris* was substantial.¹⁷ Of course, Navy interest in *Polaris* was not solely the result of wanting to get even with the Air Force; there were compelling strategic reasons to pursue sea-based missiles, most important of which was survivability.

Interservice rivalry thus works by firstly increasing the number of consumers and producers within the military, as each service tries to think of its own solution to the same problems and challenges. Should a rapid-reaction force be delivered by strategic airlift or naval carrier battle groups? Should distant targets be attacked by strike aircraft, cruise missiles launched from ships, or commandos dropped deep behind enemy lines? As in biology, increased diversity raises the possibility of having the most appropriate solution on hand when the need and situation arises.

The second effect of inter-service rivalry is to increase the effectiveness of civilian oversight over the military. After all, politicians are necessarily limited in their understanding of military affairs, and who better to tell them about the weaknesses of the Air Force's latest bomber than the Navy, who might have

competing strike aircraft under development? Certainly, the Air Force cannot be expected to divulge the bomber's weaknesses voluntarily. Likewise, the Air Force is in the best position to challenge the effectiveness of carrier-based aviation relative to land-based airpower by exposing the vulnerabilities of aircraft carriers.

Lastly, by playing off one service against another, civilians can steer the military towards certain preferred policies. If the Army remains unsupportive of peacekeeping missions, the Marine Corps might be persuaded to take up the task. If the Air Force were reluctant to develop unmanned air vehicles (UAV) which some casualty-adverse civilians may prefer to avoid the political repercussions of a captured pilot the Army might be willing to procure UAVs instead for battlefield reconnaissance, damage assessment, artillery cueing and even tactical fire support (for armed UAVs).

Fostering Innovation

How can we unify the lessons of these three theories and arrive at an integrated policy of encouraging innovation in the military? This is an issue that requires more serious contemplation beyond the scope of this article; nonetheless, we can begin to distil some conclusions from our discussions so far. First of all, Rosen's theory points towards the need for careful human resource and career management in order to foster innovation. Although sometimes neglected as a merely supporting or administrative function, human resource management does have an impact on the relative political power of the many communities within a military. For example, the simple matter of classifying a vocation as 'combat' (as opposed to 'service' or 'support') can greatly increase the relative influence of that vocation as well as the resources available to it. Similarly, there should be an even spread of vocations amongst the senior ranks to prevent any one community from gaining too much power a navy dominated by battleship admirals will find it more difficult to devote resources towards the building of attack submarines and aircraft carriers, as well as the development of appropriate undersea or naval aviation doctrines.

Secondly, to increase the likelihood of fresh ideas permeating the military's decision-making echelons, there should be fast personnel turnover, civilian/political oversight, and even inter-service competition. Understandably, in this era of 'jointness' and cooperation, the notion of inter-service rivalry may be hard to accept, but some level of competition is at times necessary to overcome the fundamental difficulties in testing weapons and wartime doctrines during peacetime. Inter-service competition can thus help weed out bad innovations, as well as spur each service to work harder than it otherwise would under an amiable environment.

Being Innovative

As we begin the new century and millennium, innovation has become fashionable in business literature. Those who encourage it are admired as visionaries; those who profess to understand it and practise it are rewarded richly. Even the military has not escaped the so-called revolution in military affairs (RMA) is its response to the 'learning organisations', 'disruptive innovations' and 'new economy' of the civilian world. Yet RMA is itself an amorphous notion, with definitions varying from author to author. The impact of information technology, increased 'jointness' between services, a gradual shift towards operations other than war (OOTW) and disengaged warfare from a distance; these are just some of the few trends that theorists have attributed to RMA.¹⁸

On the surface, these concepts are appealing because they mirror parallel developments in the business and political arenas. The rise of the Internet, wireless communications, and broadband technologies have sparked belief in the coming dominance of information technology, especially by the military which constantly deals with the 'fog of war'. 'Synergy' has become the buzzword of management; interpreted within a military context, this simply becomes 'jointness'. And with the fall of the Soviet Union and the decline of communism internationally, the military might of the Western alliance now without a palpable threat to focus on has become increasingly applied to peacekeeping missions, causing a shift in attention to OOTW. Finally, politicians keen on harvesting the peace dividend are becoming reluctant to commit men to the dangers of war, therefore preferring disengaged warfare using airpower, stand-off precision weaponry,

and cruise missiles. In a way, the RMA is thus simply the military's reaction to broader social, economic, technological and political developments.

We have thus completed the first phase of innovation, in the form of the RMA, by recognising important trends that will affect the military and its operations in the next decade or two. But this is not enough, for we merely stand at the threshold of a revolution; the RMA, by itself, does not provide a roadmap on how to proceed. We are like the European armies at the turn of the century, who were faced with radical changes such as mechanisation, the introduction of airpower, the advent of undersea warfare, and dramatic shifts in the balance of power across the European states. All of them recognised the major trends, but their reactions to the changes were vastly different, and some were more successful than others at coping. It remains to be seen whether we have learnt from their experiences, and can now formulate better policies to promote innovation within the military so that it can adapt to the coming changes.

Endnotes

1 Barry R. Posen, *The Sources of Military Doctrine*, Ithaca: Cornell University Press, 1984, pages 41-59.

2 Edward L. Katzenburg, "The Horse Cavalry in the Twentieth Century: A Study in Policy Response", *American Defense Policy*, Baltimore: John Hopkins, 1973.

3 Barry R. Posen, *The Sources of Military Doctrine*, pages 32-33.

4 Samuel P. Huntington, *The Soldier and the State*, Cambridge: Harvard University Press, 1967, pages 7-18.

5 This discussion focuses on officers because it is usually the case that officers initiate and program innovation within the military, even if enlisted personnel may be ultimately responsible for implementation. It is therefore reasonable to concentrate entirely on the behaviour of the officer corps when analysing military innovation.

6 In a previous article, I have discussed the limitations of operations research (OR) using the case study of smart bomb development in the USAF. As the example demonstrated, OR is ultimately just a tool that must be employed correctly by humans, some of whom unfortunately may be laden with prejudices and beliefs that distort the 'objectiveness' of the technique. See "Charging into the Twilight", *Pointer*, Vol. 26 No. 2, 2000.

7 As it should well be. Once set down, a requirement should not be changed too easily else it is liable to lose focus. Innovators cannot chase a moving target, hence requirements should stay fairly constant during the development cycle. Unless circumstances change so drastically as to render the requirement out-dated, major modifications should probably be made only as an upgrade after completion.

8 There have been various studies looking at the importance of 'demand-pull' in generating innovation, and there is some evidence to suggest that demand had not played a major role in military innovation, especially during the twentieth century. This implies, then, that producer-led innovation had been an important factor. See Merton Peck and Frederick Scherer, *The Weapons Acquisition Process: An Economic Analysis*, Cambridge: Harvard University Press, 1962, page 236, and Martin van Creveld, *Technology and War: From 2000 BC to the Present*, New York: Free Press, 1989, page 220. On the other hand, an internal US DoD study, Project Hindsight, did find that a clear understanding of military need motivated a significant number of weapons development events. See Raymond Isenson, "Project Hindsight: An Empirical Study of the Sources of Ideas Utilised in Operational Weapon Systems", *Factors in Transfer of Technology*, Cambridge: MIT Press, 1969, page 168.

9 In July 1999, the US Congress House Appropriations Committee (whose approval was required to pass the military's budget) proposed to delay the F-22 programme by up to 2 years so that the US\$2 billion meant for the F-22 in the FY00 budget would go into other, more 'pressing' needs. These included the procurement of 8 additional F-15s, 5 F-16s, and 8 KC-130J tankers; in particular, procurement of the F-15s was judged important so as to keep the F-15 production line open in case of delays/problems in the F-22 programme. "Congress and USAF Battle Over Future of F-22", *Jane's Defence Weekly*, Vol. 32 No. 3, July 21, 1999.

10 One might ask: if current abilities are already sufficient to handle foreseeable threats, why is there still a need to innovate or upgrade? The key to answering this question lies in the term 'foreseeable threats' how does one know that he has foretold the threats accurately? Prior to the Vietnam War, US Army tactics and equipment were developed entirely to counter the perceived threat of massive Soviet tank formations rolling

down the central European plains. Few resources were allocated to warfare in other types of terrain, resulting in an army that was tactically and technologically ill-equipped to fight the jungle war in Vietnam which consisted primarily of numerous small skirmishes by light infantry. Although the army managed to adapt to this new way of fighting quickly, it is reasonable to ask why nothing was done to increase capabilities in this area despite increased US intervention in Vietnam many years before the outbreak of war. Continual innovation is thus necessary not just to develop new tactics and weapons, but also to rejuvenate threat assessment and rethink the nature of war.

11 More generally, there has been a wealth of literature on innovation in large bureaucracies (of which the military is an example). These include James Q. Wilson, "Innovation in Organization: Notes toward a Theory", *Approaches to Organizational Design*, Pittsburgh: University of Pittsburgh Press, 1966; Lawrence B. Mohr, "Determinants of Innovation in Organizations", *American Political Science Review*, Vol. 63, March 1969; and James D. Thompson, *Organizations in Action*, New York: McGraw-Hill, 1967.

12 Stephen Rosen, *Winning the Next War*, Ithaca: Cornell University Press, 1991.

13 In certain exceptional cases, civilians and scientists do have a say over the conduct of military operations. Just after the invention of the nuclear bomb, for example, both civilians and soldiers were equally ignorant about nuclear war fighting, thus both sides were able to play a role in the development of nuclear doctrine. In fact, one could even argue that scientists, with their superior knowledge of nuclear theory, should take the lead. However, such anomalies should be regarded as exceptions that prove the rule unless there are very extraordinary circumstances, usually it is the soldiers who ultimately have the final say over military operations.

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

15 One of the simplest, yet more powerful, ways in which civilians have influence over the military is their control of promotions to top military positions. Political leaders can thus shape military doctrine by carefully selecting generals sympathetic to their preferred grand strategies, even though they may not have direct say over military affairs.

16 Harvey M. Sapolsky, "The Interservice Competition Solution", *Breakthroughs*, Vol. 5 No. 1, Cambridge: MIT Defense and Arms Control Studies Program, Spring 1996.

17 Ballistic missiles were then a new technology, and with land-based missiles already a great technical challenge, many in the Navy doubted the feasibility of basing missiles at sea. Furthermore, astute naval officers realised that, under the fiscal austerity of the Eisenhower administration, any Navy missile programme must be absorbed within the overall Navy budget, thus taking away funds from other programmes. Harvey M. Sapolsky, *The Polaris System Development: Bureaucratic and Programmatic Success in Government*, Cambridge: Harvard University Press, 1972, chapter 2.

18 See, for example, Michael J. Mazarr, "The Revolution in Military Affairs: A Framework for Defense Planning", US Army War College 5th Annual Conference on Strategy, Carlisle Barracks: Strategic Studies Institute, 1994; or David Jablonsky, "US Military Doctrine and the Revolution in Military Affairs", *Parameters*, Autumn 1994.



LTA Choy Dawen is a WSO (C3) in ASB. He graduated with a SB(Physics) and a SB(Economics) and with a SM(Physics) and SM(Economics) from MIT in 2000.

UN Peacekeeping and the SAF

by CPT (NS) (DR) Jeremy Lim

"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."

Dr. Tony Tan

Deputy Prime Minister and Minister for Defence

SAF Overseas Medal Presentation Ceremony

29 July 1997

The year 2001 will mark 12 years of the SAF's participation in UN peacekeeping missions. This article traces the development of the SAF's contributions to world peace and stability, examines the rationale for our emphasis on UN peacekeeping missions and discusses the implications of future commitment to peacekeeping in the new millennium.

*Peacekeeping was pioneered by the United Nations (UN) in May 1948, with the establishment of the UN Truce Supervision Organization during the first Arab-Israeli war.¹ The maintenance or restoration of peace, is one of the central tenets, in fact even the *raison d'être*², for the existence of the UN, and this is reflected in the Preamble to the UN Charter, which states unequivocally, that the "peoples of the United Nations determined to save succeeding generations from the scourge of war".*

SAF officers first donned the 'Blue Helmet'³ in 1989, when 14 officers were sent to assist in the supervision of elections in Namibia under the umbrella of the UN Transition Assistance Group (UNTAG). Since then, the SAF has played an active role in supporting our nation's peacekeeping contributions.

The SAF is a largely conscript army with only a small core of regular soldiers. Why then, despite our small size and myriad commitments at home, do we continue to support actively UN peacekeeping efforts, and what are the implications of further and even larger contributions to peacekeeping? This paper will review the SAF's participation in peacekeeping to allow a better understanding of the present scope of the SAF's role, before scrutinizing the reasons for our involvement and finally studying the implications of enhancing our peacekeeping capability.

THE SAF'S Contributions to UN Peacekeeping

Peacekeeping Missions

In 1989, the SAF embarked on her maiden voyage into the uncharted waters of peacekeeping with the deployment of officers in UNTAG in Namibia. It was to be a smooth and uneventful journey, but 2 years later, the nation watched with bated breath as our soldiers once again donned the 'Blue Helmets'. Operation *Nightingale*, the SAF's medical mission to the Gulf during Operation *Desert Storm*, marked the first time since the inception of the SAF that she had sent a unit into a combat theatre. The SAF also sent officers to participate in the UN Iraq-Kuwait Observation Mission (UNIKOM). This mission is now into its eleventh year and is the longest standing UN peacekeeping mission the SAF has contributed to. The SAF has steadily maintained her presence and even held senior appointments in UNIKOM, including Chief Military Personnel Officer (1992), Chief of Staff and Deputy Force Commander (1993) and Deputy Chief Operations Officer (1996).

The mission profiles the SAF has participated in can be broadly categorized into the following:

Medical Missions

- Ops *Nightingale*
- UN Verification Mission in Guatemala (MINGUA)
- UN Transition Administration in East Timor (UNTAET)

Observation/ Inspection Missions

- UNTAG
- UNIKOM
- UN Angola Verification Mission II (UNAVAEM II)
- UN Observer Mission to South Africa (UNOMSA)
- UN Special Commission (UNSCOM)

Strategic Lift Missions

- UN Transition Authority in Cambodia (UNTAC) [Super Puma helicopters]
- INTERFET⁴ [LSTs, C-130s]

Peacemaking Mission

- UN Special Mission in Afghanistan (UNAMA)

Other Contributions

One significant milestone in Singapore's participation in UN peacekeeping activities occurred in January 1997 when Singapore subscribed to the UN Standby Arrangements System (UNSAS), which she formalized subsequently with a Memorandum of Understanding (MOU) signed in May of the same year. The UNSAS, first established in 1994 provides a framework to enhance readiness and facilitate timely deployment of an operation. Under the MOU, the SAF undertakes to place military planners and observers, medical personnel, helicopters and other transport aircraft on standby for the support of UN peacekeeping operations. Singapore was the seventh country to be a signatory, and since then, over 60 countries have followed suit.

The support function of the SAF in UN peacekeeping operations cannot be underplayed either. At a time of clarion calls for downsizing and greater fiscal stringency⁵, Singapore seconded, at her own cost, personnel to the UN Department of Peacekeeping Operations. Between 1995 and 1999, 9 SAF officers have held appointments in the department's Situation Centre, Training Unit and Medical Unit.

Rationalizing the SAF'S Contribution to UN Peacekeeping

Singapore Needs the UN to Succeed!

"Singapore recognizes the importance of global peace and the crucial role the UN plays in safeguarding and upholding international law and order through its peacekeeping efforts. As a responsible member of the international community committed to the principles of the rule of law, we have contributed effectively to numerous UN peacekeeping missions despite our manpower and resource limitations."

Mr Wong Kan Seng

*Minister of Home Affairs*⁶

Singapore celebrates 36 years of membership in the UN this year. Globalization, a process where "social relations acquire relatively distanceless and borderless qualities (and) human lives increasingly played out in the world as a single place"⁷, is absolutely crucial to Singapore's economic survival. Singapore needs the world as a market. With no natural resources of our own, we depend heavily on the export of our talent and technology to not just the region, but to the whole world. Thus, it is in Singapore's interest to ensure peaceful resolution to conflicts and minimal disruption to economic stability, especially in the immediate region. As one author puts it succinctly, "Economic growth in ASEAN is underpinned by regional security, which is fuelled by the process of globalization."⁸ The UN represents the ideal of peaceful settlement of disputes, and provides through the Security Council and the DPKO, a vehicle for ensuring the continued stability essential for economic growth, through "all necessary means"⁹, if so required.

Singapore recognises and supports the importance of the UN as an international organization. States, people and businesses need an international system to provide physical, economic and legal security.¹⁰ Singapore, exists and will continue to exist, only by maintenance of international rule of law and hence contributes its human and financial resources, where possible, to support the UN's operations.

Prime Minister, Goh Chok Tong, underscored this in a speech to the UN General Assembly in 1995, saying, "Small countries like Singapore need the UN, and must play a constructive role in supporting it."¹¹

Engaging the Region

"The greatest challenge facing us is to build and maintain a strong security architecture in our region that is able to meet the challenges arising from a fast-evolving security landscape in the Asia-Pacific."

BG Stephen Wong

4th ARF Meeting of the Heads of

Defence Universities/ Colleges/ Institutions

Beijing, Sept 2000

The volatility of the region emphasizes the need for Singapore to take an active interest in developments. Peacekeeping, or more generically peace support¹², whether in the context of a UN mission or as part of an UN endorsed international coalition, e.g. INTERFET, can serve as a valuable tool to engage the key players in the dispute.

Singapore must remain sensitive to the sentiments of her neighbours, and hence the nature of involvement, be it medical or strategic lift assets, or even ground troops, must be carefully considered in this light. Our regional partners must be fully cognate of our intentions and accept our rationale for participation.

Operational Value

Anecdotal reports like "participation in UN peacekeeping missions offers a rich experience for the SAF"¹³ pay testament to the invaluable exposure of UN peacekeeping missions.¹⁴ The interaction with soldiers from other nations and the knowledge garnered from working with foreign protocols and operating procedures provide fertile ground for ideas for further refinement of our own doctrines and operating procedures, and this translates into enhancement of our operational readiness.

Peacekeeping missions also serve as a platform to exercise our systems of operation. Addressing the SAF Medical Corps, then Chief of Defence Force, LT-GEN Bey Soo Khiang, said, " you can boast of a system tried and tested, not only in exercises, but also in operations and disasters".¹⁵

The role of peacekeeping missions in 'defence diplomacy' cannot be underestimated. Through such missions, our officers forge meaningful relations with their foreign counterparts and contribute to enhancing interoperability with friendly armies. Our returning officers understand their contemporaries better and come to a deeper realization of how other nations operate and function. All these put the SAF in good stead for future collaboration and cooperation with our allies.

At the individual level, peacekeeping missions inculcate "strategic creativity"¹⁶, the thinking of national and regional security in the context of complex global circumstances. Furthermore, the exposure to the stark realities of war and its aftermath leave a deep impression on our officers, and strengthen the appreciation of Singapore's peace and harmony and the need to defend her against adversaries.

What Next in the New Millennium?

It is significant that, Singapore, often described as the 'red dot' on a world map, sits on the UN Security Council for two years. Such an achievement does spell certain duties and responsibilities that Singapore must now assume.

With respect to peacekeeping, the Report of the Panel on UN Peace Operations is even clearer: "no amount of good intentions can substitute for the fundamental ability to project credible force if complex peacekeeping, in particular, is to succeed".¹⁷

As discussed above, Singapore's strategic interests are closely tied-in to UN's effort to uphold international law and stability, and hence we should contribute within our means to strengthen this effort.

Implication of Enhancing Peacekeeping Involvement

Preparation for the Possibility of Death and Injury

The SAF has long been portrayed as a defence force, and it is not unreasonable for the public to be concerned with the possibility of injury even though the SAF has taken all necessary precautions.

The SAF Medical Corps must be ready at all times to mobilize a team to bring back our injured from anywhere in the world if need be. The tragedy of SQ 006 and the scramble that ensued in preparing to return the injured flight crew home from Taiwan illustrates the need to be ready for any contingencies. The Medical Corps must take steps to ensure round-the-clock aero medical evacuation is available to bring the SAF wounded home.

The Need for A Rapidly Deployable Peacekeeping Force

The SAF's contribution to peacekeeping must be timely if it is to be significant. The first few weeks following a ceasefire or peace accord are the most critical and the Panel on UN Peace Operations has recommended that the UN should be able to fully deploy peacekeepers within 30 days of adoption of a Security Council resolution. The activity that ensued in September when the RSS*Excellence* and RSS *Intrepid* were deployed at short notice to join the INTERFET forces emphasizes further the need for some form of pre-selection of peacekeeping forces.

Summing Up

The SAF has contributed actively to Singapore's role on the global stage with participation in UN peacekeeping missions since 1989. Nonetheless, with the increasing recognition of Singapore as a regional power and membership of the Security Council, the SAF will be called upon to develop further her peacekeeping capabilities, even to the extent of deploying ground troops.

It is submitted that the most practical and pragmatic approach to peacekeeping support is to identify personnel, equipment and hence capability early and roster a joint peacekeeping team. This goes one step beyond the UN Standby Arrangement System in that individuals and individual units, and not the SAF as a whole, commits to being ready for deployment as a peacekeeping force. Only then can we fly the 'Stars and Crescent' proudly and truly be a force for peace in today's uncertain world.

Endnotes

1 Basic Facts about the United Nations. UN Dept of Public Information 1998

2 Report of the Panel on United Nations Peace Operations. [www.un.org /Dept/dpko](http://www.un.org/Dept/dpko) Accessed 15 Nov 2000. The panel described the UN's principal mission as helping communities engulfed in strife and maintaining or restoring peace.

3 *The Blue Helmets: A Review of United Nations Peacekeeping*, UN Dept of Public Information 1996

4 The International Force for East Timor (INTERFET) is not strictly speaking, a UN Peacekeeping mission, but a multi-lateral force given the mandate by the UN to restore peace and stability in East Timor.

5 See for example, Senator Jesse Helms' article "Saving the UN" *Foreign Affairs* 1996, Vol 75, No 5 Pg 2-7 where he argued for a 50% cut in the entire UN bureaucracy.

6 Speech made during presentation of flag and insignias to the Singapore Police Force members of the UN Peacekeeping Force Contingent, 1 Mar 2000

7 Bayliss J, Smith S, *The Globalization of World Politics: An Introduction to International Relations* Ch 1 pg 14

8 Lim R G S, *Globalization and Its Impact on Security in Southeast Asia.*, *Pointer*, Vol 26 No 3 pg 24-39

9 The term "all necessary means" as stated in Chapter 7 of the UN Charter enables forces to use force as appropriate to achieve the UN mandate.

10 Kennedy P, Russett B, "Reforming the United Nations", *Foreign Affairs* Sept/ Oct 1995 pg 56-71

11 Speech made to the UN General Assembly 1995. Quoted on Ministry of Foreign Affairs website:www.mfa.gov.sg/un/intic.html. Accessed 15 Nov 2000

12 Peace support is a wider term encompassing peace making, peace enforcement and peace building in addition to peacekeeping.

13 See for example, LTC (DR) Tan Chi Chiu's comments in *The Operation Nightingale Experience*. *Pointer Supplement* May 1992: "The realities of working in a war theatre with obvious threat of enemy action and destruction were brought home to the team members. Such a lesson cannot be learnt through exercises in peacetime."

14 MINDEF Policy Office, "The SAF's Contribution to UN Peacekeeping." *Pointer Supplement* July 1999 pg 3-9

15 As quoted in Tan P H, "Medicins Sans Frontiers", *Medlink* (Newsletter of the SAF Medical Corps) Dec 1999

16 The term 'strategic creativity' was used by RADM Teo Chee Hean to describe how important it was for our officers to understand the strategic perspective of countries in the region and how it influences national security planning. The Search for New Strategic Directions. Keynote address at opening of SAFTI-MI~ Australian National University Joint Masters Programme in Strategic Studies on 10 Jan 1995

17 Report of the Panel on United Nations Peace Operations. See endnote 2.

Bibliography

Basic Facts About the United Nations, UN Dept of Public Information 1998

The Blue Helmets: A Review of United Nations Peacekeeping, UN Dept of Public Information 1996

United Nations Peacekeeping: A Decade of SAF's Participation, *Pointer Supplement*, July 1999

Useful Websites

Ministry of Defence, Singapore www.mindef.gov.sg

Ministry of Foreign Affairs, Singapore www.mfa.gov.sg

Singapore Police Force www.spf.gov.sg

United Nations Department of Peacekeeping Operations www.un.org/Dept/dpko



CPT (NS) (DR) Jeremy Lim Fung Yen is currently Resident, Department of Orthopaedics, S'pore General Hospital. He graduated with an MBBS (Singapore) in 1997 and served as a staff officer in the RSN Medical Service from 1999 2001. CPT (NS) (DR) Lim was awarded the SAF Overseas Medal for his overseas stint in East Timor with RSS *Perseverance* in 2000.

Indonesia's Relations With China: Analysing Strategic Reorientation, Jakarta's Motivations and Beijing's Strategic Value

by LTC Patrick Nathan

This essay attempts to answer the question: Has there been a strategic reorientation in Indonesia's relations with China? This subject came into focus when Indonesian President Abdurrahman Wahid announced he was making China the destination of his first overseas state visit because of Beijing's "consistent support" for Indonesia in international diplomacy.¹ The Speaker of the House, Amien Rais, underscored this point when he added, "political hegemony has been used by superpower countries in the international community to overcome that we need Asian strength from countries like China".² My main contention is that no such strategic reorientation has taken place, although there has been a warming of relations. To make my assertion, I will analyze the factors shaping Indonesia's foreign policy, the phases in Sino-Indonesian relations, the concept of strategic reorientation, the motivations for reorientation and its significance, and the most plausible track for Sino-Indonesian relations in the coming decade.

Factors Shaping Indonesia's Foreign Policy

Domestic Political Calculus

The domestic political configuration of Indonesia is significant. With the advent of the *Orde Bahru* government, the military, the Muslim constituency and the reform movement have played key roles. Former President Suharto, for much of the last three decades, was a predominant influence in the formulation of foreign policy. The military and Muslim quarter had to be appeased on certain key issues but Suharto's personal inclinations usually prevailed. A case in point is Suharto's decision to restore diplomatic relations with China in 1990 despite the military's misgivings. It is difficult to ascertain how heterogeneous the foreign policy decision-making process is at present but Indonesia, under the leadership of President Wahid, has instituted some discipline, conspicuously absent during Habibie's tenure.

Independent and Active Foreign Policy

This was essentially operationalized through Indonesia's sponsorship of and participation in the Non-Aligned Movement. An independent and active foreign policy served the needs of internal consolidation, as a way of sustaining domestic priorities over the rigours of international life.³ It also served to project Indonesia, as a country of consequence that, in more disparagingly realist terms, has been interpreted to mean regional *Pax Indonesia* ambitions. Indonesia has traditionally objected to the existence of formal military alliances like the Five-Power Defense Arrangement. It has a preference for regimes like the Zone of Peace, Freedom and Neutrality and the Southeast Asia Nuclear Weapons Free Zone, and a "spider web" approach to security arrangements. It is predisposed to supporting ASEAN but fears its influence would be diluted in larger regional organizations like the ARF, owing to the presence of China and the US.

Phases in Sino-Indonesian Relations

There are four distinct phases in Sino-Indonesian relations. The first started with the PKI (Communist Party of Indonesia) coup in 1965. The combined impact of the coup in Indonesia and the Cultural Revolution in China were significant as they led to the termination of diplomatic relations with China.⁴

The second phase began with the formal reestablishment of ties in 1990. Direct links took some time to materialize, as there was opposition from the nationalist quarter and the military. A new challenge had been perceived China would become a dangerous competitor and normalization would strengthen the position of

the ethnic Chinese community. Several conditions were therefore attached to the reestablishment of ties to make it internally acceptable:

- severance of aid to subversive activities
- non-interference in Indonesia's internal affairs
- settlement of all outstanding debts.⁵

But in the broader sense, normalization can be understood by:

- the need to neutralize the remnant PKI threat to establish relations with a significant Asia Pacific power.
- not to appear anachronistic in view of the other ASEAN countries' earlier diplomatic initiatives.
- to regularize existing informal and uncontrolled channels of communications.
- to reflect the changing perception of China and, consequently, the obligation to engage and overcome latent fears.
- to enable Suharto to play a major role in world politics in general and in the Asia Pacific region in particular.

The third phase started with the Chinese publication of a South China Sea map in 1991/2. Although the new Chinese map did not directly affect Indonesia's northern-most territories, it did lay claim to the Liquefied Natural Gas fields northeast of the Natuna island group. This had an immediate impact on the Indonesian security community that then set about making contingency plans to secure its northern frontier. The Australians were engaged as consultants in the preparation of credible ground and air defences. In this respect, there is a direct connection to the Indonesian-Australian Security Agreement of 1995 that had, as its main purpose, the intention to project a united front against a commonly perceived enemy.

The Recent Upswing in Relations

The fourth phase began to take shape in the last few months of 1999. There has been some improvement in Indonesia's political and economic links with China while the military connections are still tentative. There are indications as well of an Indonesian *quid pro quo* for Chinese goodwill.

Political Support

These have been largely confined so far to China's diplomatic support for Indonesia in the UN. In recognition, President Wahid said he would make China the destination of his first overseas state visit because of Beijing's "consistent support" for Indonesia in international diplomacy. Wahid told US Ambassador Robert Gelbard that a visit to Washington was not yet on the agenda. His statement was read as a signal from the new government that ties with Western countries would take a back seat to relations with Asia.⁶ Speaker Rais underscored this point when he added, "political hegemony has been used by superpower countries in the international community to overcome that we need Asian strength from countries like China, India, Singapore and Thailand. With an Asian force, we can protect our own Asian interests in the global community". Rais made it clear that this "is a signal that, in future, Indonesia will put more attention on Asia first".⁷

China, with the help of most Asian countries, has made specific contributions in the UN. First, at a special United Nations Human Rights Commission session devoted to East Timor, Asian countries clashed with a coalition of Western states that had threatened the establishment of a global inquiry into atrocities. The Asian bloc, rallied by China, closed ranks around Indonesia, objecting strongly to the meeting having been convened after a disputed narrow vote in favour of it. The Asian countries challenged the validity of the talks saying the decision had "discounted the unanimous view of an entire region" and that "any act by the UN system, including the commission, should contribute to the stability of the situation and not exacerbate it".⁸ In addition, China commented that the inquiry into human rights violations in East Timor was inappropriate and would be difficult to implement without the cooperation of Indonesia. The commission,

however, voted in favour of a motion to establish the inquiry despite dissenting votes from the Asian bloc, Russia and Cuba.⁹Second, China succeeded in eliminating some references to human-rights investigations before clearing the way for Security Council authorization of the UN peacekeeping operation to East Timor. An earlier dispute was resolved only after the exclusion of a call for cooperation with the investigation.¹⁰

During his visit to China, President Wahid emphasized that Sino-Indonesian cooperation would ensure that Asia would be represented in the rightful manner in world affairs. He added, "in this way also, politically and security-wise, we will be able to develop Asia as a force to face the other parts of the world. Together, Indonesia and China can provide the world with the security that is needed and guaranteed by equality in politics and economics". He explained that his visit was to draw the two countries closer together "after a long time of chill in relations because of misunderstandings on our part that the leaders of China had designs on Indonesia. A new Indonesia exists and the approach now is to have better understanding between Indonesia and China".¹¹ President Jiang Ze Min reciprocated with pledges of continued assistance and stressed that the Chinese government would not support any effort to split Aceh from Indonesia.¹²

Economic Support

President Wahid's visit to China also served to boost economic links. China and Indonesia are scheduled to hold a meeting in the first half of the year to discuss economic cooperation. Both countries had agreed to the meeting of a joint economic and trade committee to talk about concrete ways in which they could effect economic cooperation. As economic recovery in Indonesia is a key concern, President Wahid's trip was also intended to persuade ethnic Chinese to return to invest in the country. A Chinese Foreign Ministry statement concluded that China and Indonesia were two large countries in Asia and that the potential was great for cooperation between them.¹³ Analysts agree that the outlook for economic cooperation is good. Foreign investors would continue to keep Indonesia in sight owing to its large population and wealth of natural resources and if China's economy continues to grow, its demand for the raw materials that Indonesia has to offer could create synergies for both countries.¹⁴

China's financial aid to Indonesia is a manifestation of the closer economic links. China has given Indonesia a grant of US\$4.6 million, to be used to help internally displaced persons in the volatile areas of Ambon, Aceh and West Timor. China's ambassador to Indonesia, Chen Shiqiu, said that the aid agreement followed President Wahid's recent visit to China. China has also agreed to grant Indonesia US\$300 million worth of export credits. This is in addition to US\$200 million in credits provided for under an earlier accord.¹⁵

Military Links

After its fallout with Australia over East Timor, there are indications that the Indonesian military is examining ways to expand links with its Asian counterparts.¹⁶ China is apparently high on its list. Analysts believe that Indonesia is "sending a signal" to Australia and other Western nations that strategic alignments in the Asia-Pacific could change if "countries tried to play hard-ball with Indonesia".¹⁷ In more concrete terms, the cancellation of the Australia-Indonesia security agreement gives Jakarta the option of purchasing weapons and spare parts from Beijing. It would enable Indonesia to cut down its reliance on the West. In addition, Indonesia would have greater latitude, as military sales would no longer be linked to its human rights record.¹⁸

Indonesian *Quid Pro Quo*

It could be argued that the recent relaxation of controls on Indonesian ethnic Chinese could be part of the new government's plan to eradicate discrimination. But the implementation of the new policy soon after President Wahid's trip to China appears to lend credence to the proposition that this is a quid pro quo for Chinese support. (This notwithstanding assertions that President Wahid visited China to reinforce domestic proclamations that he would not tolerate racism.¹⁹) The treatment of ethnic Chinese in Indonesia was one of the items on the agenda. President Jiang Ze Min had hinted that discrimination against ethnic Chinese should not be allowed to jeopardize good bilateral relations. He added, "we feel that ethnic Chinese have

long been members of the large Indonesian family. They have made long-term contributions to the Indonesian economy and they should enjoy the same rights and obligations as other Indonesians." Beijing had earlier spoken out against the atrocities committed during the May 1998 Jakarta riots.²⁰

In 1967, Jakarta issued a range of decrees limiting the carrying out of Chinese religious and cultural practices in a bid to lessen ethnic tension following the anti-Communist crackdown. Chinese living in Indonesia were required to adopt Indonesian-sounding names as a condition for citizenship. Laws made it illegal to teach Chinese languages in schools. The use of Chinese texts was banned and Chinese-language publications were barred entry. The Indonesian government has announced that it would review these laws and "neutralize" them.²¹ So far, President Wahid has lifted restrictions on the open practice of Confucianism and the celebration of Chinese New Year, and has announced that Chinese schools would no longer be banned in the country. The government has yet to officially recognize Confucianism alongside Islam, Catholicism, Protestantism, Buddhism and Hinduism.²² Apart from the unilateral measures, Beijing and Jakarta have agreed to set up an institute in Indonesia to promote Chinese culture.²³

Analyzing the Recent Upswing in Relations

There are three possible ways in which the recent upswing in relations with China can be analyzed. It could either be a knee-jerk reaction, a warming of ties or a strategic reorientation.

- *Knee-jerk Reaction.* The prevailing rapprochement could be a knee-jerk reaction to recent developments. First, it could be an affront to Australia. Australian pressure for an independence poll and its leadership in the UN peacekeeping operations in East Timor is perceived to be a stab in the back as Australia had acquiesced to Indonesian occupation of the province for more than two decades. Indonesia's cancellation of a joint security agreement with Australia, which had called for consultation and joint action to confront a common threat, and its warming of relations with China constitute a "slap in the face". Second, it could also be an affront to the US which, through the IMF, had pressed for painful internal reforms in Indonesia and which, through the UN, had pushed for greater intervention in East Timor.

Third, it could be a tactical accommodation with China calculated to win greater support, in the UN, for Indonesia's human rights policies.

- *Warming of Ties.* It is possible that the recent upswing may constitute a warming of ties and it may be to Indonesia's advantage to maintain the present trajectory. First, it can obtain political, economic and, possibly, military support from China without suffering the obligations and consequences of an "entangling alliance". Second, it can help mitigate perceptions that it is a threat to regional order. Third, it can avail itself of the opportunity of closer contact with the Chinese to determine if it should proceed further. Indonesia would not want to be rushed into a collusion of convenience with China. It would want time to conduct a cost-benefit analysis. First, Indonesia, given its lingering suspicions, would want to divine Chinese short and long-term intentions. Second, it would want to determine precisely what it could extract from the relationship. Third, it would want to calculate the costs. Domestically, nationalist elements, particularly the military, would oppose a reorientation.²⁴ Indonesia would also have to anticipate the reactions of the US, Japan, Australia and the other ASEAN countries.
- *Strategic Reorientation.* A strategic reorientation in Indonesia's relations with China would take place if first, there is a transformation in its perception of China and second, substantive cooperation occurs across a broad spectrum of political, economic, military and security matters. To give the strategic reorientation thesis due consideration, I will examine its possible motivations and significance before analyzing the most plausible track that Indonesian foreign policy will take in the coming decade.

Motivations for Reorientation

There are several cognate reasons why Indonesia might want to consider a reorientation in its relations with China.

- An alliance with China could help Indonesia resolve the conflicting territorial claims to the northeast of the Natunas and assert its dominance in its own archipelagic waters.²⁵
- A strategic partnership with China could go some way towards reducing US influence in Southeast Asia. Indonesia could take advantage of a perceived US unwillingness to get entangled in regional disputes.²⁶
- Indonesia could raise its influence in ASEAN as the linchpin in relations with China and similarly increase its prestige in the larger Asia Pacific region. This could go some way towards the realization of a regional *Pax Indonesia*.
- Indonesia could maintain the initiative in pursuing détente with China.²⁷ In particular, it could be the country to benefit most from Chinese concessions on trade, markets and territorial disputes, and diplomatic support in the UN. It could also capitalize on regional trends to get ASEAN member countries on board in its new policy of strategic reorientation.

Significance of Reorientation

An alignment between China (read Confucianism) and Indonesia (read Islam) would constitute a threat to the West, in particular the US.²⁸ President Wahid himself has said that he looked forward to a possible new alliance involving India, China and Indonesia. Such an alliance, he asserted, would help rectify the "lopsided" power of the West. The most obvious point of agreement between Indonesia and China is apprehension over US power and American intrusion into the internal affairs of both countries; Jakarta and Beijing have expressed concern over US hegemony in the wake of NATO's intervention in Kosovo. While many obstacles stand in the way of such a bloc, such an alignment would first, necessitate a major adjustment of policy on the part of the US, Japan and Australia if they are to stay relevant and be able to protect their interests. Even an increase in foreign policy coordination is a major concern for regional actors. Both China and Indonesia cover vast areas, have large populations and resources, and exert influence over strategic waterways. Coordinated geo-political strategies would increase that influence greatly.²⁹ Second, for the smaller states of Southeast Asia, their latitude for manoeuvre will be severely circumscribed. There is the danger that Indonesia would use ASEAN to serve its regional ambitions and sacrifice its members' security interests, for example in the Spratlys, to appease China. Southeast Asian countries would have to decide if they would want to bandwagon with or balance against the new alliance; either decision could have painful repercussions.³⁰

Most Plausible Track

A knee-jerk reaction is an unlikely explanation as Indonesia has already passed a critical threshold; it has accepted economic aid from China and undertaken reforms that could provoke the majority Muslim community, decisions that could only have been made after much deliberation. A warming of ties is the most plausible track as Indonesia is unlikely to initiate a strategic reorientation with China. There are several reasons why Indonesia would prefer the present trajectory and not give in to temptations to proceed further.

Suspicion has been engendered by Chinese inconsistency in bilateral relations - following the reestablishment of ties the Chinese published a map that claimed almost the entire South China Sea. The Indonesians would understand that national interests and not hazy notions of security cooperation drive the Chinese. Managing a relationship with a rising power that has perceived revisionist agenda cannot be easy. Indonesian leaders would continue to be wary as China, the senior partner in the alliance, could take advantage of the partnership. It would also be difficult to forge and maintain an internal consensus, as nationalist elements would continue to oppose collaboration with China. Lacking a strong leader in the mould of Suharto, such an issue could prove to be dangerously divisive.

Indonesia would probably cleave to tried and tested balancing mechanisms rather than opt for a bandwagoning strategy. Indonesia has built up its military defences while condoning alliances and basing

arrangements. Bandwagoning with China would mean giving up any other recourse, including any security assistance the US could offer.

China can provide certain benefits but cannot replace Japan and the West as sources of economic aid to Indonesia. Indonesia would therefore be wary of antagonizing its main benefactors. A reorientation could backfire as the US, Japan, Australia and other ASEAN member countries would probably obstruct the new alignment given its adverse implications. Fourth, it is difficult to discern common and enduring strategic interests between China and Indonesia. Beyond the need to support one another in the face of "Western onslaughts" and exercise undisputed control over claimed territories, these interests remain largely undefined. How would the alliance be sustained? Would both powers be content with the "new status quo" or would they want to revise it later?

Conclusion

Although there has been a warming of relations, a strategic reorientation in Indonesia's relations with China has not taken place. Given the underlying problems, it is unlikely Indonesia would consider such an undertaking in the coming decade. China continues to be a principle threat and, although relations are improving in political and economic matters, cooperation in military and security affairs has not progressed beyond vague statements of intent.

Endnotes

1 AFP, "China As My First Stop? Why Can't I?", *The Straits Times*, October 27, 1999. China was not, however, the first country President Wahid visited. He first made a circuit of working visits to ASEAN countries and then went to the US for eye treatment, followed by an informal stopover in Japan.

2 AFP, Reuters, "Gus Dur's Foreign Policy to Go East, says Amien", *The Straits Times*, November 2, 1999.

3 Michael Leifer, *Indonesia's Foreign Policy* (London: George Allen & Unwin, 1983), pp. 27-29

4 Leo Suryadinata, *Pribumi Indonesians, the Chinese Minority and China* (Singapore: Heinemann Asia, 1978), pp. 165-189

5 Dewi Fortuna Anwar, *Indonesia in ASEAN: Foreign Policy and Regionalism* (Singapore: ISEAS, 1994), pp. 182-190.

6 AFP, "China As My First Stop? Why Can't I?", *The Straits Times*, October 27, 1999.

7 AFP, Reuters, "Gus Dur's Foreign Policy to Go East, says Amien", *The Straits Times*, November 2, 1999.

8 Reuters, "Asia and West Clash at UN Rights Session", *The Straits Times*, September 25, 1999

9 AFP, Reuters, "UN Human Rights Inquiry Inappropriate, Says Beijing", *The Straits Times*, September 29, 1999.

10 Reuters, "One Step Closer to a UN Administration", *The Straits Times*, October 23, 1999.

11 Mary Kwang, "A Few Nations Could Boost Asia's Standing", *The Straits Times*, December 4, 1999.

12 Mary Kwang, "Gus Dur in China to Improve Ties", *The Straits Times*, December 2, 1999.

13 Mary Kwang, "Beijing, Jakarta to Discuss Economic Links", *The Straits Times*, December 3, 1999.

14 AFP, "Region Will Face 'Challenge' From China for Foreign Investments", *The Straits Times*, December 27, 1999.

15 AFP, "Jakarta Gets \$7.6m Grant From China", *The Straits Times*, December 30, 1999.

16 Reflecting the frustration within the senior ranks, one officer was quoted as saying "the military was fixated with Australia. We went to them for everything right up to signing a security pact. But their recent actions in East Timor show the hypocrisy of the white men in Australia. In the end, they think they hold the higher moral ground on East Timor, not knowing that they were one of the countries that encouraged us to intervene in 1975. All the senior officers feel betrayed."

17 Derwin Pereira, "TNI Turns to Asian Nations to Better Ties", *The Straits Times*, September 23, 1999.

18 Stratfor, "Indonesia, India, China Alliance?", *The Straits Times*, October 18, 1999.

19 Jakarta Post/Asia News Network, "Ethnic Chinese Can Now Celebrate Festivities Openly", *The Straits Times*, January 18, 2000.

20 Mary Kwang, "Gus Dur in China to Improve Ties", *The Straits Times*, December 2, 1999.

21 AP, Reuters, "Jakarta to Review Laws on Ethnic Chinese", *The Straits Times*, January 6, 2000

22 AFP, "Indonesia Lifts Bans on Chinese Traditions", *The Straits Times*, January 20, 2000.

23 Mary Kwang, "A Few Nations Could Boost Asia's Standing", *The Straits Times*, December 4, 1999.

24 In this respect, the past musings of Indonesia's new Defense Minister are instructive. Of the three new incumbents in the key portfolios of Defense, Foreign Affairs and Home Affairs, Juwono Sudarsono is the only one to have systematically laid down his thoughts on the country's proper relationship with China. China has been identified as Indonesia's principle source of external threat. Relations with China are as much a matter of domestic politics as of foreign policy the extent of China's influence affects the internal dynamics of the politics and economics of all Southeast Asian states. China's South China Sea claims are based on ancient notions of cultural primacy rather than modern-day concepts of sovereignty. Sudarsono foresees the possibility of a major military crisis in the South China Sea and the next war may involve some ASEAN states and China. China's military modernization is an indication that its intentions are not benign especially when viewed in the context of US military retrenchment. Sudarsono believes in the advent of multipolarity with a quadrangular balance of power shaping up in the Asia-Pacific region. The Spratly dispute is too delicate and too intricate a subject to be resolved purely through diplomatic means. A forward-based strategy with selective pre-positioning of theater forces will have to be combined with an economic deterrence capability. Although it could be argued that Sudarsono's firm views about China would probably be moderated now that he is a cabinet minister, his views are strongly coincident with that of the military; he expressed these views when he was Deputy Director of the National Defense Institute. See Juwono Sudarsono, *Surviving Globalization: Indonesia and the World* (Jakarta: Jakarta Post, 1996), pp. 93-99.

25 The US has blocked Indonesia's proposed designation of three north-south archipelagic sea-lanes. As a face-saving solution, the three sea-lanes have been granted partial recognition while all other traditional routes for navigation continue to be passable.

26 Stephen Walt is of the view that the US has no vital interests in the region. This has been partly verified by the Clinton Doctrine and the reluctance on the part of the US military to get involved in the Spratlys dispute. See Lee Siew Hua, "Clinton Doctrine is flawed", *The Straits Times*, November 21, 1999 and AFP, "Manila cannot rely on US, says military chief", *The Straits Times*, December 6, 1999.

27 There are indications that both Malaysia and Vietnam are engaging China. See Joseph Liow, "Malaysia's Post-Cold War China Policy: A Re-Appraisal", Unpublished Thesis, Institute of Defense and Strategic Studies, Melina Nathan, "Vietnam: Is Globalization a Friend or a Foe?", *Southeast Asian Affairs 1999*, pp. 339-357 and Melina Nathan, "Vietnam: Political Outlook 2000-2001" in *Regional Outlook: Southeast Asia 2000-2001*, eds. Daljit Singh and Nick J. Freeman (Singapore: ISEAS, 2000), pp. 30-33.

28 Samuel P. Huntington, "The Clash of Civilizations?", *Foreign Affairs*, vol. 72, no. 4 (September/October 1993), pp. 1-26.

29 Stratfor, "Indonesia, India, China Alliance?", *The Straits Times*, October 18, 1999.

30 Stephen Walt, *The Origins of Alliances* (Cornell University Press, 1987)

Bibliography

- AFP, "China As My First Stop? Why Can't I?", *The Straits Times*, October 27, 1999.
- AFP, Reuters, "Gus Dur's Foreign Policy to Go East, says Amien", *The Straits Times*, November 2, 1999.
- Leo Suryadinata, *Pribumi Indonesians, the Chinese Minority and China* (Singapore: Heinemann Asia, 1978)
- Dewi Fortuna Anwar, *Indonesia in ASEAN: Foreign Policy and Regionalism* (Singapore: ISEAS, 1994).
- Reuters, "Asia and West Clash At UN Rights Session", *The Straits Times*, September 25, 1999
- AFP, Reuters, "UN Human Rights Inquiry Inappropriate, says Beijing", *The Straits Times*, September 29, 1999.
- Reuters, "One Step Closer to a UN Administration", *The Straits Times*, October 23, 1999.
- Mary Kwang, "A Few Nations Could Boost Asia's Standing", *The Straits Times*, December 4, 1999.
- Mary Kwang, "Gus Dur in China to Improve Ties", *The Straits Times*, December 2, 1999.
- Derwin Pereira, "TNI Turns to Asian Nations to Better Ties", *The Straits Times*, September 23, 1999.
- Mary Kwang, "Beijing, Jakarta to Discuss Economic Links", *The Straits Times*, December 3, 1999.
- AFP, "Region Will Face 'Challenge' from China for Foreign Investments", *The Straits Times*, December 27, 1999.
- AFP, "Jakarta Gets \$7.6m Grant from China", *The Straits Times*, December 30, 1999.
- AP, Reuters, "Jakarta to Review Laws on Ethnic Chinese", *The Straits Times*, January 6, 2000
- AFP, "Indonesia Lifts Bans on Chinese Traditions", *The Straits Times*, January 20, 2000.
- Jakarta Post/Asia News Network, "Ethnic Chinese Can Now Celebrate Festivities Openly", *The Straits Times*, January 18, 2000.
- Leo Suryadinata, *Indonesia's Foreign Policy Under Suharto* (Singapore: Times Academic Press, 1996).
- Michael Leifer, *Indonesia's Foreign Policy* (London: George Allen & Unwin, 1983).
- AFP, "Spratlys Issue: Accept Code of Conduct, China Urged", *The Straits Times*, November 29, 1999.
- Juwono Sudarsono, *Surviving Globalization: Indonesia and the World* (Jakarta: Jakarta Post, 1996).
- Joseph Liow, "Malaysia's Post-Cold War China Policy: A Re-Appraisal", Unpublished Thesis, Institute of Defense and Strategic Studies.
- Melina Nathan, "Vietnam: Is Globalization a Friend or a Foe?", *Southeast Asian Affairs* 1999.
- Melina Nathan, "Vietnam: Political Outlook 2000-2001" in *Regional Outlook: Southeast Asia 2000-2001*, eds. Daljit Singh and Nick J. Freeman (Singapore: ISEAS, 2000).
- Samuel P. Huntington, "The Clash of Civilizations?", *Foreign Affairs*, vol. 72, no. 4 (September/October 1993).
- Stratfor, "Indonesia, India, China Alliance?", *The Straits Times*, October 18, 1999.

Lee Siew Hua, "Clinton Doctrine is Flawed", *The Straits Times*, November 21, 1999.

AFP, "Manila Cannot Rely on US, Says Military Chief", *The Straits Times*, December 6, 1999.

Stephen Walt, *The Origins of Alliances* (Cornell University Press, 1987)

This essay was written in 2000.



LTC Patrick Anthuvan Nathan is currently a Branch Head in AID. He graduated with a B Soc Sci (Honours) in 1986 and with a Master of Science (Strategic Studies) from NTU in 2000. LTC Nathan attended SCSC in 1995.

A Quantum Leap Towards Knowledge Warfare: Revolution in Military Organisations in the SAF

by CPT Fong Kum Kuen

The revolutions and evolutions of warfare since antiquity have been the product of three variables, namely weaponry, which is closely related to technological developments; strategy and tactics; and the organization and structuring of forces. These variables are symbiotically linked such that the advancement of technology and betterment of weapon systems do not yield battlefield superiority unless their employment is matched with innovative operational concepts. Similarly, the organization of forces or troops must capitalize on these new weapons to yield victory with the economy of force.

Rapid advancements in information technology and other military-applicable technologies like sensors, digitization, human-computer Interface technology and microminiaturation¹ over the last decade have led to what many described as a Revolution in Military Affairs (RMA), i.e. the advent of knowledge warfare or information-age warfare. The world had a foretaste of this third wave warfare during the Persian Gulf War of 1991, which immediately found many converts and believers in a contemporary RMA. Theoretically, a RMA occurs because of three components:

- *the application of new technologies into military system;*
- *the introduction of innovative operational concepts that most often than not, capitalize on the availability of new technologies like precision strikes and sensors;*
- *organizational innovation, i.e. how forces can be structured to exploit the new enabling capabilities of the individual soldiers up to the unit levels.²*

To date, many modern armies had already tracked their developments towards the knowledge warfare paradigm, capitalizing on emerging technologies. However, is sufficient emphasis being placed on the re-organization and structuring of forces so that the military potentials of these new Armies can be optimized?

The purpose of this study is to probe into factors which may challenge our assumptions about force structuring and military organizations in an emerging era of warfare. Specifically, it will slate several considerations for the re-organization of the Singapore Armed Forces (SAF), particularly the Army so that its organizational changes can keep pace and synchronize with our efforts of modernization. (The assumption of this study is that the Army is not perceived as an independent entity, but the key force of the land campaign which includes the three services.) Army 21 symbolizes a leap into the era of knowledge warfare, but is the SAF putting new wine into old bottles? The central question is, what sort of force structures will synergize with new operational concepts and doctrines and take advantage of emerging technology to achieve battlefield superiority? Is the existing combined arms division structure appropriate to fight the information-age war?

This paper will be organized into three main parts:

- *the landscape of the knowledge warfare paradigm will be charted to highlight the salient imperatives for military re-organization.*
- *key features and organizational underpinnings of the United States (US) Force XXI and the French Brigade-Based Army will be studied;*
- *the study will present several possibilities of force structuring that is worth considering for the SAF.*

Making Sense of Warfare in the Information Age The Knowledge-based Paradigm

"A revolutionary new economy is rising based on knowledge, rather than conventional raw materials and physical labor. This remarkable change in the world economy is bringing with it a parallel revolution in the nature of warfare."³

In one of their acclaimed works in the early 1990's, Alvin and Heidi Toffler concluded that the way Man makes war reflects the way he makes wealth. Thus with the transformation of the industrial-based economy into a knowledge-based economy, the nature of warfare embarked on a parallel track. The advent of the information-age led to the transition from industrial-based manoeuvre warfare to information-based knowledge warfare where the basis of power is knowledge as opposed to industrial strength. In essence, precise knowledge about the enemy intentions, operational concepts, capabilities and their exact dispositions in time and space is crucial for the application of force to shatter their center of gravity. The knowledge warfare paradigm leads to a new doctrine whose operational concepts consist of information warfare, precision strike and decisive manoeuvre.⁴

Information Warfare

At the military operational level, information warfare is likely to contribute to fundamental changes in the conduct of warfare through the ability to achieve situational awareness and/or knowledge while denying the adversary the same. These imply the importance of attacking the adversary's command, control, communications, computer and intelligence (C4I) systems. The resultant focus of future warfare therefore may become the establishment and maintenance of an information advantage as a war-winning strategy. In fact, to assign information warfare in the same priority as manoeuvre and firepower is a critical step towards the building of a knowledge-based Army.⁵

The implications of operational information warfare on force structures are that information dominance can facilitate the economic use of forces and resources. First, comprehensive situational awareness will allow commanders to identify, locate and target the critical mass of the adversary's forces, thus concentrating firepower and forces to destroy it. As such, targeting assets and ground forces must be responsive to such dynamic operational tempo to exploit the advantages of information superiority. Second, another crucial aspect of the information war is getting ahead of the adversary's targeting assets and ground forces must be responsive to such dynamic decision cycles represented by the OODA cycle (OODA denotes Observation, Orientation, Decision and Action). Therefore, a force structure characterized by a steep hierarchy will lose out in terms of the time required to pull information (combat intelligence) from the battle space to attain situational awareness and disseminate decision or orders down the hierarchy for execution.

Information warfare will eventually take on a leading role in future military campaigns. This makes it both more critical and more challenging to get the organizational issues right. Already, many non-military organizations have capitalized upon information technology by decentralizing and flattening their traditional hierarchical structures.

Precision Warfare.

"Precision strike probably is the best understood potential new warfare area of the next RMA."⁶

Precision warfare may be defined as "the ability to locate high value, time sensitive, fixed and mobile targets; to destroy them with a high level of confidence; and to accomplish this within operationally and strategically significant time lines." The development of sensor technology coupled with emerging C4I capabilities is one important step, which hastens the tempo of war.

Precision warfare presents significant challenges to military organization and operational concept formulations. Basically, the role of artillery and fighter platforms in delivering fire can be pushed to new frontiers. It does not make sense for these assets to be assigned and organized in traditional force structures where long planning and decision cycles will retard their responsiveness. The operational concepts of targeting and interdiction should focus on time-criticality and should integrate intimately with sensors which may also include fighting troops on the ground. The fundamental logic behind new operational concepts of smaller and lighter force structures is that dramatic improvements in precision targeting systems and weaponry can enable a bigger share of battlefield power to be brought in from great distances, thus requiring a smaller presence of organic weapons in theory. If fewer organic weapons are needed, then the ground force itself can be made smaller. These also entail that combined-arms and joint warfare can be applied lower down to the brigade-level. Having been integrated into the matrix of combined arms and Joint-warfare, the brigade will have the capability to exploit operational advantages on the ground and influence follow-on battles, with equal or more firepower than the existing combined arms division.

It was suggested that, as long-range precision strike capabilities proliferate in the future, defence might be dominant, with large attacking forces being able to be stopped by relatively small, stand-off fire forces⁷, another form of high-tech guerilla warfare. There are other 'schools' that argue that time-critical wars favour the offensive. But whichever the case, if ground forces are smaller, lighter and dispersed, they are harder to find and thus a much more difficult target for an adversary's precision targeting systems.

Dominating Manoeuvre

"Dominating manoeuvre is defined as the positioning of forces, integrated with precision strikes, information warfare ops to attack decisive points, defeat the adversary center of gravity"⁸

The concept of dominating manoeuvre implies "the employment of smaller, more lethal ground forces in situations where they cannot dominate the entire battle space, but can dominate that portion of the battle space chosen for its operational or strategic impact on the war."⁹ Dominating Manoeuvre demands new operational and organizational concepts that can exploit the decisive importance of time with the result that will be more simultaneous than sequential. Therefore, it is imperative that manoeuvre forces and units are smaller, more organizational streamlined and agile so they can deliver decisive punches in the right time and space. It is in this context that brigades or light divisions are relatively more ideal compared to the existing heavy divisions, where deployment, let alone rapid deployment is a logistical nightmare.

New Operational Parameters

Fundamentally, knowledge warfare aims to achieve paralysis and shock rather than attrition.¹⁰ The basic tenet of this 'Shock Warfare' is the compulsion of the enemy to take a course of action that we can dictate. These effects can be achieved by the enabling capabilities of information warfare, precision strikes and the application of dominating manoeuvres. In summary, new operational parameters that may challenge the way forces are being structured include:

- The promise that knowledge-based warfare will "change the framework of the vertical continuum of war".¹¹ In knowledge warfare where the layers of echelons are more inter-connected and their boundaries blurred by emerging information technology, the framework at which the operational-level of war serves as the interface between the strategic and tactical levels is beginning to lose its relevance. In essence, the enhanced horizontal and vertical inter-connectivity of forces will facilitate greater interaction between the strategy and tactics, such that command and control can be undertaken with magnified tempo from the strategic level.
- The operational parameter that today's war, particularly an information-based war is about time, not about ground. There is a shift from the old orientation on space to a new orientation toward time. Warfare has reached a threshold where the battle space was enlarged but time available for decision-making and actions is compressed to a critical level.¹² The notion of time to commanders is no longer defined by weeks or days, but operations on the basis of real-time and by minutes is becoming a reality of life.¹³ Thus the absolute advantage over an adversary is the tightening of the

OODA "until an asymmetry created in time proves to be decisive".¹⁴ There is now an imperative to locate, identify, target and attack in minutes or seconds. In view of these emerging operational concepts, traditional military organizations may be compelled to restructure itself to suit the new demands of war and to pass the test of a small OODA Cycle. Finally, these operational concepts demand that forces be relatively small in size so that many units could be placed on a battlefield fairly quickly.

- Organizational implications of a knowledge warfare Army also highlights the importance of jointness. The Persian Gulf War of 1991 demonstrated the force-multiplying effects the Army and the Air Force could generate by working together.¹⁵ This inter-service-operability emphasises particularly in joint information warfare and the access of precision strikes by fighter or attack helicopter platforms at the lower levels, preferably fighting brigades. In the longer term, joint-warfare in the information age may require new assumptions and concepts for the organization of forces. First, complementary operations between the services would blur their boundaries based on the notion that Joint HQs will select forces to spearhead operations based on the greatest potential for battlefield success.¹⁶ This would imply that forces may not be organized within the boundaries of each service, but will see greater integration. Second, a possible doctrinal development in joint-warfare could be the notion of "organizing to win". As such, "command relationships of the past cannot be relied on to continue to work in the future. It is necessary to pioneer new command structures for peacetime as well as periods of crisis".¹⁷ In a nutshell, forces can be configured into modules like the French Army, according to requirements of any niche operations.

With an understanding of knowledge warfare and appreciation of the implied operational parameters, it is expedient to examine two examples of force structuring based on these new paradigmatic assumptions: the US Force XXI divisions and the French brigade-based Army.

The US Force XXI Divisions and the French Brigade-Based Army

US Force XXI Divisions

"Army XXI Division represents the first step in the Force XXI process that will restructure the US Army to a capabilities-based force, designed to dominate the 21st-century battlefield across a broad spectrum ranging from high-intensity conflict to stability and support actions".¹⁸

The operational and organizational concept of the US Army XXI Division is to provide a "highly lethal, survivable and manoeuvrable division against conventional and asymmetrical threats".¹⁹ The US Army XXI division is structured around the concept of combined arms organizations but has the flexibility to be tasked-organized to carry out a spectrum of operations. This new division concept thus places a premium on tailorable organizations that operate as part of a joint-task force. Several principles are derived from this guidance:

- Organization around information
- Domination of battle-space, space and time
- Being rapidly deployable and operationally agile
- Enhanced tailorability through modularity
- Diverting tasks that inhibit primary mission, "to fight and win"²⁰

John R. Brinkerhoff, a retired Colonel of the US Army argued in Parameter that Force XXI should consider discarding the division, an "old hierarchy for the army in the field".²¹ He propounded that the flexibility sought after in the Army XXI Divisions will be thwarted by the administrative constraints of a large organization such as the existing division structure. Secondly, this flexibility cannot be facilitated because the thick hierarchical structure diminishes the ability of the division commander and staff to influence combat operations.²²

Brinkerhoff argued that New Combat Brigades should replace the Division as the basic combined arms organization varying from about 5,000 to 6,000 in strength. Technological developments that increase the range, accuracy and lethality of weapons can provide the new brigades with the same level of firepower as the existing division. The brigades, as mentioned will be combined arms organizations with infantry or tank manoeuvre battalions, supported by its organic reconnaissance, aviation, engineer, combat support and service support battalions. There would also be brigades of light infantry, armour, airborne and air-assault force. These brigades will also capitalize on greater firepower down to the individual soldier.

According to Brinkerhoff, the advantages of the brigade-based New Army are of several folds, but the following points are relevant in our context. First, an entire layer of field command is removed, thus simplifying command and control (C2), in effect shortening the entire OODA cycle. The dismantling of the Division command layer will imply that the Corp or the Army level will have more subordinate Headquarters (HQs) to control and coordinate. However, emerging C4I capabilities would allow these combined arms or Army HQs to command and control these larger number of subordinate HQs. Second, the Army could improve the mix of combat forces so that it "could concentrate more of its limited resources into general-purpose combat formations capable of engaging in a wide range of combat operations".

The French Brigade-based Army

The current state or state of changes in the French Army is the result of the dual processes of "restructuration" and "professionalisation"²³ under the 1997-2002 military programming law. The law's objective is to "change the orientation of the armed forces from one of deterrence to one of action, possessing the attendant rapid external deployment capability needed for crisis prevention".²⁴ The emphasis is placed upon modularity or the ability to tailor forces according to the demands of differing operations from war fighting to operations other than war.

The re-organization of the French Army will see the formation of ten manoeuvre brigades and six specialist brigades (logistics, signals, artillery, engineer and intelligence) from dismantled divisions. The present division organizations and structures have been disbanded and in its place, several four-star EMF (*Etat Major des Forces*) force headquarters staff, capable of controlling two to four brigades were set-up. At the lower level, as mentioned, the brigades will be tasked organized into "*groupment tactiques*" i.e. formations and "*sousgroupments tactiques*" or battlegroups/battalion taskforces, according to operational needs. Therefore, there are hard rules to dictate that the manoeuvre HQs will deploy with their constitute battalions.

The strategic context and principles underpinning force planning in the above armed forces are unique and cannot be applied piece-meal to the SAF. For the US and French Army, global security roles and the strategic imperatives to project armies across continents to execute a wide spectrum of operations served as the basis for force planning. However, the SAF can draw several parallel lessons in considering military reorganization of our ground forces. Particularly, the imperatives for today's armies to be organized around information, for rapid deployment and flexibility to be responsive to magnified ops tempo and also to the range of operations. With improvements in lethality, accuracy of weapons, there are potentials to achieve greater economy of forces.

The following section will examine the strategic and military context of the SAF and explore the possibilities of applying these principles for force re-organization.

Revolution in Military Organization for SAF?

*"The Singapore Armed Forces are in the eyes of many experts, the most competent and experienced in all-arms mobile warfare within ASEAN."*²⁵

The current state of technological progression is not a direct function of a state's industrial power, such that a state' military power is not merely an outgrowth of its military- industrial complexes.

The availability of commercial-off-the shelves (COTs) high-tech weapons and the aggressive sales of arms from the former Eastern bloc effectively facilitated a rapid diffusion of military technology. The result is that relatively technologically backward states can gain access to advanced weapons ranging from missiles to fighters. With technology and weapons being constant, the answer rests in formulating strategy and tactics, and dynamic force structures to weld these instruments of war to gain an absolute advantage in the battlefield. Herein lies the imperative for reconsidering our force structures. The implications of knowledge warfare on force structuring discussed earlier will not be reiterated in this section as its applications are straightforward. With these in mind, this section will look at localized factors that may impact on our force-structures.

From the onset, Singapore's military planners had placed a premium on defence against potential external threats. Therefore the SAF had embarked on a conventional defence strategy with an emphasis on deterring potential external threats²⁶ and espousing the 'poisonous shrimp concept'. The approach towards defence planning has always been technical, emphasizing on cost-effectiveness based on worst-case scenarios.²⁷ As such, the SAF has a ready pool of knowledge and experience to take one more quantum leap towards transforming the Army through force re-organization. The following strategic, operational and tactical considerations and constraints serve as impetuses:

In terms of the broad strategic context, the recent Asia economic crisis revealed the weaknesses of Southeast Asia's political economy and highlighted the potential for economic and political instability to spill over borders. There is also greater demand for Singapore to contribute to regional security through the United Nations. In the near future, it appears that the key role will be to actively support peacekeeping and peace-support operations. But in view of the general instability of the region and the propensity for Singapore to be caught in a regional conflict, it is imperative that the SAF must prepare and be ready to respond with a wide spectrum of operations ranging from low intensity conflicts to operations other than war.

The key imperatives for the re-organization of armed forces are essentially found at the operational and tactical levels. Firstly, the key problem of Singapore defence is the lack of strategic depth, which acted as an impetus to adopt a forward-defence strategy.²⁸ As such, it is critical to survive the first crucial days of any military attack, and critical success factors lie in retaliatory and deep strike capabilities on land and air.²⁹ These capabilities are not merely defined by heavy firepower but also dictate that land forces must be organized based on speedy mobilization and deployment. With the advent of knowledge warfare, redundancy and survivability of ground forces also gain importance.

The issue of time in battle is not absolute speed, but speed relative to an adversary. Timely information becomes critical for an adversary to discern friendly force activities and to be able to manoeuvre his forces to react spontaneously. Quick decision-making processes ensure that these time-sensitive opportunities can be exploited to defeat an adversary. Having streamlined and flattened military organizations allow the SAF to compress the time needed for battle-procedure and decision-making. This will tighten our OODA and command and control cycles vis-à-vis an adversary. It is in this context that the SAF can consider organizing its basic combined arm units around the brigade instead of the division. The removal of one layer of command by the removal of the combined arms division can effectively shorten the overall planning and decision-cycle of General Staff of War down to the fighting units. Army Command can exploit the advantages created by superior C4I architectures to move its numerous brigades and direct operational fires. In the long run, taking this step can prepare the SAF for the institutionalization of knowledge-based warfare in terms of doctrine, operations and procurements. The economy of forces inherent in this organizational concept is attractive in view of our manpower constraints; it allows SAF to optimize the manpower-firepower equation.

The downsizing of our basic tactical units down to brigades can be contemplated based on our land area of only 632 square-kilometers and limited high grounds to provide communications for tactical HQs. At such, the physical and electromagnetic signatures of a Division HQ with its large defended perimeter will cause it to stand up like "sore thumbs" around the island in the build-up to hostility, thus lowering their survivability. Organization of forces into smaller operational units facilitates force dispersion and thus concealment without diluting command and control, which will result in lower losses to potential adversary precision strikes.

It is in this tactical context that losses of specialized forces would have a different order of impact, with an analogical effect of losing a limb or a principal organ. The current combined arms division is organized in a specialized manner such that the removal of its armour brigade would greatly reduce its manoeuvrability and deep strike capabilities. Thus, losing three armour brigades would be equivalent to losing all 3 divisions. Under this consideration, building many small but high-firepower brigades would provide redundancy after initial battle damages while prolonging the survivability of our land-based forces in general. The new brigades should be organized based on the combined arms concept, that each is mobile and capable of fighting two or more battles to exploit tactical advantages on the ground. In the long run, joint operational concepts can integrate these brigades with a seamless airframe to optimize both air and land power.

Conclusion

Building a military and seeking to optimize all its military potentials is equivalent to solving a Rubik's Cube. If technology, weapons, doctrines, strategy, tactics, manpower and organizations are the individual squares of a Rubik Cube, then solving the puzzle involves delicate adjustments and combination of the components. Emerging military technology may create the capabilities, but military organizations must also evolve to ensure the SAF is at its optimum in knowledge warfare. As expected, the implications of radical changes to military organizations are many, but are not addressed in this paper.

Endnotes

1 For a detail understanding of cutting-age military technology, see Christopher C. Bolkcom and Joseph A. Tatman, *Jane's Special Report: US Military R&D*, (Virginia: Jane's Information Group, 1997).

2 Harry K Lesser, Colonel, US Army, *The Revolution in Military Affairs and Its Effects on the Future Army*, (Naval War College, 1993), p. 2

3 Alvin and Heidi Toffler, *War and Anti-War*, (New York: Warner Books Inc, 1993), p. 3.

4 Harry K Lesser, *The Revolution in Military Affairs*, p. v.

5 Robert E. Johnson, "Functional-Based Assessments and RMAs" in Keith Thomas, ed. *The Revolution in Military Affairs: Warfare in the Information Age*, (Canberra: Australian Defense Studies Center, 1997), p. 89.

6 Ibid., p. 86.

7 Stanley Byron Weeks, "Operational Innovation and Doctrine" in Keith Thomas, ed. *The Revolution in Military Affairs: Warfare in the Information Age*, p. 71.

8 Robert E. Johnson, "Functional-Based Assessments and RMAs", p. 89.

9 John Matsumura, Randall Steeb, John Gordon IV, Tom Herbert, Russell W. Glenn and Paul Steinberg, *Lightning Over Water: Sharpening America's Light Force for Rapid Reaction Missions*. A RAND Research Paper. Quoted from World Wide Web, [URL:<http://www.rand.org/publications/MR/MR1196/>].

10 Thomas G. Mahnken, "War in the Information Age" in *Joint Force Quarterly* (Winter 1995-96) p. 40.

11 Harry K Lesser, *The Revolution in Military Affairs*, p. 16.

12 Ajay Singh, "Time: The New Dimension of War" in *Joint Force Quarterly*, (Winter 1995-96), p. 57.

13 Frederick R. Strain, "The New Joint Warfare" in *Joint Force Quarterly*, (Autumn 1993), p. 18.

14 Ajay Singh, "Time: The New Dimension of War", p. 57.

15 Dennis J Reimer and Ronald R. Fogleman, "Joint Warfare and the Army-Air-Force Team" in *Joint Force Quarterly*, (Spring 1996), p. 10.

16 Frederick R. Strain, *The New Joint Warfare*, p. 23

17 Ibid.

18 John J. Twohig. Colonel, Thomas J. Stokowski, Major and Bienvenido Rivera, Major, US Army, *Structuring Force XXI*. Quoted from World Wide Web. [URL:<http://www-cgsc.army.mil/milrev/English/MayJun98/sto.html>]

19 Ibid.

20 Ibid.

21 John R. Brinkerhoff, "The Brigade-Based New Army" in *Parameter* (Autumn 1997), pp. 60-72. Quoted from World Wide Web, [URL: <http://carlisle-www.army.mil/usawc/Parameters/97autumn/brinkerh.htm>].

22 Ibid.

23 Rupert Pengelley, "French Army in Profile: From Hollow Force to Hard Core" in *Jane's International Defense Review*, (June 2000), p. 40.

24 Ibid.

25 J.N. Mak, *ASEAN Defense Reorientation 1975-1992: The Dynamics of Modernization and Structural Change*, (Canberra: Strategic and Defense Studies Center, Australian National University, 1993), p. 162.

26 Ibid., p. 96.

27 Ibid., p. 103.

28 Ibid. p. 96.

29 Ibid., pp. 97-98.

Bibliography

Bolkcom, Christopher C. and Joseph A. Tatman, *Jane's Special Report: US Military R&D*. Virginia: Jane's Information Group, 1997.

Brinkerhoff, John R. "The Brigade-Based New Army" in *Parameter* (Autumn 1997), pp. 60-72.

[URL: <http://carlisle-www.army.mil/usawc/Parameters/97autumn/brinkerh.htm>].

Johnson, Robert E. "Functional-Based Assessments and RMAs" in Keith Thomas, ed. *The Revolution in Military Affairs: Warfare in the Information Age*, Canberra: Australian Defense Studies Center, 1997, pp. 79-93.

Lesser, Harry K. Colonel, US Army, *The Revolution in Military Affairs and Its Effects on the Future Army*, Naval War College, 1993.

Mahnken, Thomas G, "War in the Information Age" in *Joint Force Quarterly*, Winter 1995-96, pp.39-43

Mak, J.N., *ASEAN Defense Reorientation 1975-1992: The Dynamics of Modernization and Structural Change*. Canberra: Strategic and Defense Studies Center, Australian National University, 1993.

Matsumura, John, Randall Steeb, John Gordon IV, Tom Herbert, Russell W. Glenn and Paul Steinberg, *Lightning Over Water: Sharpening America's Light Force for Rapid Reaction Missions*. A RAND Research Paper. [URL:<http://www.rand.org/publications/MR/MR1196>]

Pengelley, Rupert, "French Army in Profile: From Hollow Force to Hard Core" in *Jane's International Defense Review*. June 2000. pp. 40-58.

Reimer, Dennis J. and Ronald R. Fogleman, "Joint Warfare and the Army-Air-Force Team" in *Joint Force Quarterly*. Spring 1996. pp. 9-15.

Singh, Ajay, "Time: The New Dimension of War" in *Joint Force Quarterly*. Winter 1995-96. pp. 56-61.

Strain, Frederick R. "The New Joint Warfare" in *Joint Force Quarterly*. Autumn 1993. p. 17-23.

Toffler, Alvin and Heidi. *War and Anti-War*. New York: Warner Books Inc, 1993.

Twohig, John J. Colonel, Thomas J. Stokowski, Major and Bienvenido Rivera, Major, US Army. *Structuring Force XXI*.

[URL:<http://www-cgsc.army.mil/milrev/English/MayJun98/sto.html>]

Weeks, Stanley Byron. "Operational Innovation and Doctrine" in Keith Thomas, ed. *The Revolution in Military Affairs: Warfare in the Information Age*. Canberra: Australian Defense Studies Center, 1997. pp. 71-78.

CPT Fong Kum Kuen, a Signal Officer by vocation, is currently node commander in a Signal Battalion. An Academic Training Award holder, he graduated from NUS with a BA (Honours)(2ndUpper) majoring in History and Political Science.

Denying Armageddon: Winning the New Battle Against Horizontal Nuclear Proliferation in the 21st Century

by LTA (NS) Graham Gerard Ong

The release of atom power has changed everything except our way of thinking... the solution to this problem lies in the heart of mankind.

Albert Einstein

We should not fault anyone for his or her optimism of a better 21st Century. The horrifying nuclear arms race of the Cold War did not escalate into a "final" Third World War envisaged by many. Instead, the collapse of communism in the Soviet Union abruptly ended the intense bipolar superpower rivalry it had with the United States. This has had an impact on the international system whereby states have appeared to be more preoccupied with markets than with battlefields. Unsurprisingly then, the international arms control campaign has never been deemed more successful since the end of Cold War as global nuclear stockpiles have dropped by nearly 50 percent in the last ten years.¹

However, we should fault the same optimists for their naivete. The above facts have in no way dissolved the world of realpolitik especially in the context of an increasingly complex multipolar international system. Nation-states still hold sacred the notion of territorial and political sovereignty and will defend their core national interests at almost any cost. In this light, one should not rule out the utility of the nuclear weapon for rapid political brokerage and military supremacy especially between smaller powers against larger ones. All that is required are a few warheads to bring about the total destruction of a city or a small state.² This is the crux of the nuclear problem today: that additional states and other actors (such as a clandestine political organisation) will own nuclear weapons and decide to use them. By allowing such a trend to occur we only bring ourselves closer to Armageddon defined as "the greatest symbolic [battle] of the Apocalypse"³ or "a great [final] war or battle of nations".⁴

This paper will focus on the spread of nuclear weapons, technically termed as horizontal nuclear proliferation. A few brief scenarios of a nuclear Armageddon will be described to reflect the basis of our fears of the future. The technological process towards having nuclear weapons and the current non-proliferation strategies that aim to counter them will also be dealt with. The limitations of the current non-proliferation effort will be discussed in light of the technological advances and surrounding circumstances that have allowed a new kind of horizontal proliferation to be made possible. The impact and implications will be fleshed out in highlighting this new possible trend before suggesting a millennial start to solving the entire problem by changing our ways of thinking.

The Horror of an Armageddon and the Current Fight against Horizontal Proliferation

Military analyst Roger Hilsman in his recent book, *From Nuclear Military Strategy to a World Without War*⁵, draws up six possible scenarios of "Armageddon" or nuclear war of a global scale that mankind can face in the near future:

- Scenario 1: *Group sponsored nuclear terrorism.* A terrorist organisation might smuggle a small suitcase type nuclear bomb in a city of a major power and set it off to dramatise its demands.
- Scenario 2: *State sponsored nuclear terrorism.* An "outlaw" state that acquires or manufactures nuclear weapons may try to provoke a war between the US and Russia or the US and China by sending agents to set off nuclear devices in the capitols of these countries.

- Scenario 3: *Nuclear war between third and fourth countries*. A good possibility is India and Pakistan. Both have tested nuclear weapons, and in the case of war are very likely to use them.
- Scenario 4: *A war between Israel and a Muslim state in the Middle East*. Israel is known to have built a stockpile of nuclear weapons. Countries such as Iraq and Iran have engaged in nuclear weapons activities before. If any of these or other Muslim states acquire such weapons, a war with Israel could easily escalate into nuclear warfare.
- Scenario 5: *Nuclear war between nuclear powers purely by accident*. Hilsman predicts that the number of states possessing nuclear weapons will rise such that in a decade or two, several dozen countries will have such weapons. The chances for miscalculation will be proportionately higher in launching such weapons.
- Scenario 6: *The "bolt from the blue" scenario*. This is a war that starts when one nuclear state attacks an adversary without warning during a period of low international tension and succeeds in achieving surprise. Countries that have autocratic governments allow an irrational leader to carry out such attacks based on hatred and anger without much opposition.

The scenarios above tell us that the main problem regarding nuclear weapons in the 21st Century is about the *horizontal proliferation* of nuclear weapons or "the spread of nuclear weapons to states [organisations and groups] not previously possessing them"⁶ rather than the *vertical proliferation* of nuclear weapons or the "increase in the number of weapons by the countries that already have nuclear weapons".⁷ In other words, there is a likelihood that "more fingers on more nuclear triggers will increase the probability of nuclear weapons being used by accident or calculation".⁸

This fear may seem unjustified considering the fact that, according to the US-based Arms Control Association (ACA), the current official count of nuclear weapon proliferators as at August 2000 is only eight states. Five of these are recognized⁹ nuclear powers (the "nuclear club") while the remaining three are unrecognized nuclear weapon states¹⁰ (see Diagram 1 right).

Many people attribute this rather low number to the difficulty of states in overcoming the five "extremely demanding" steps towards nuclearhood. According to analysts from the Carnegie Endowment for International Peace (CEIP), a state or organisation must climb the following proliferation ladder:¹²

- It must develop a design for its nuclear device or obtain such a design from another state;
- It must produce the fissile material for the core of the device or obtain it from an external source and then machine the fissile material to fabricate the nuclear parts of the weapon;

Diagram 1: ACA's Headcount of Nuclear Proliferators¹¹

Recognized Nuclear Weapon States	China, France, Russia, United Kingdom, United States
Unrecognized Nuclear Weapon States	India, Israel, Pakistan
States of Immediate Proliferation Concern	North Korea, Iran, Iraq, Libya
Recent Converts to Nuclear Non-Proliferation	Algeria, Argentina, Belarus, Brazil, Kazakhstan, South Africa, Ukraine

- It must fabricate, or obtain from outside, the non-nuclear parts of the device, including the high-explosive elements and triggering components that will detonate the nuclear core;
- It must verify the reliability of these various elements individually and as a system;*
- * *Stage (4) is considered the standard threshold point confirmed through an observable nuclear test.*
- It must assemble all of these elements into a deliverable nuclear armament

The truth is that these technological steps are becoming increasingly difficult to overcome. First, the knowledge of weapons design is sufficiently widespread such that trying to maintain a "shroud of secrecy" around this technical knowledge is no longer possible. Even if a state cannot acquire the sufficient technical information on nuclear design, all it has to do is innovate and build on whatever existing technical know-how it has. Designing a nuclear device - "drawing the blueprint" is within the capabilities of most nations.¹³ It is relevant to note that the common personal computer today is far more superior in capability than the computers that were used to design the first hydrogen bombs.¹⁴ Thus, "the technological barriers to acquiring nuclear weapons have been steadily eroding to a point where they no longer constitute an insurmountable obstacle."¹⁵

Next, there is a disturbing increase in the amount of available fissile material as a by-product of civil nuclear technology. As Buzan argues, the outstanding character of proliferation today is its tendency to occur via the civil route. In other words, states that start off with peaceful civil nuclear reactor programs have a higher chance of proliferating. This is quite logical since a major barrier to proliferation is the acquiring of fissile material. Also, commercial reprocessing of spent fuel (which contains weapons-grade plutonium) from civilian power reactors is now getting underway on a large scale. If such activities intensify, it is projected that there will be 550 tons of separated plutonium in commerce by 2010 after separation.¹⁶ This is more than twice the amount now contained in the world's nuclear arsenals. This option equally applies to all 'non-nuclear' commercial reactor-possessing states that produce high quantities of such fissile material in planning and executing their security strategies.

Lastly, nuclear weapons proliferation through manufacture used to be an expensive undertaking but now it is becoming relatively cheaper. The production cost of the first atomic bombs around 1945 was about \$1.88 billion. In 1968, the United Nations calculated the cost of testing a plutonium-based nuclear device at \$100 million. Eight years later, the US Arms Control Agency estimated the cost to be \$51 million for countries not possessing fissile material and \$1 million if they did.¹⁷ It would be naïve and condescending to believe that developing countries are incapable of overcoming the "extremely demanding" steps towards possessing nuclear weapons. In fact, poverty-stricken North Korea and economic-sanctioned Pakistan are able to step up their nuclear weapons programmes despite their economic difficulties.

Notwithstanding these developments, current nuclear arms-control or non-proliferation strategies aim to fight the problem at various technological stages outlined by the CEIP ladder because that is the only way proliferation can be currently fought. These containment strategies consist of mainly three distinct but overlapping non-proliferation strategies. These are:

- increasing technical constraints,
- institution building and
- treaties,
- influencing incentives/disincentives (see Diagram 2 on the next page).

For example, various treaties involve the use of technical constraints and incentives/disincentives to deal with the problem of proliferation. A good and important example is the Non-Proliferation Treaty (NPT) established in 1968 which bans the transfer of nuclear weapons and its accompanying technology to non-nuclear states. Its implementation is carried out by the International Atomic Energy Agency (IAEA) whose safeguards deter the diversion of nuclear materials from civilian usage to military purposes.

These three strategies are the final lynchpin in preventing states from acquiring operable nuclear weapons and sadly, they are all premised on some inaccurate assumption, practical limitation or dated belief. An example of an inaccurate assumption is that states are always willing to overlook their self-interest *vis-à-vis* their national security in favour of a higher goal such as stability in the international system. It is alternatively possible that treaties such as the NPT are complied with by member states only when doing so serves their interests; for example, being regarded in good international standing. Yet, when their interests are served by doing what the treaty forbids, they will do it anyway.²³ A good case in point is Iraq which was discovered to possess nuclear and fissile materials intended for military uses while it was party to the NPT.

In terms of practical limitations, the full realization of IAEA safeguards and inspections is hampered by the problem of complete verification as well as its institutional limitations. Taking the Iraqi case again, IAEA inspections failed to expose the state's covert nuclear weapons programme until after the Gulf War.²⁴ The failure of the IAEA to inspect India, Pakistan and Israel at all by virtue of their non-membership to the agency's legal arrangements means that they are not subject to inspections at all.²⁵

In the end, even if we wanted to really credit the apparent containment of horizontal proliferation, we would still have to be analytically cautious. It is spurious to say that firebreaks such as the NPT, IAEA safeguards and nuclear diplomacy have prevented further or rapid proliferation. This is a supposition without proof. It is tantamount to saying that crime rates in a particular country are kept low because of its effective laws.²⁶ To this day, analysts cannot concretely ascertain the causal relationship between the firebreaks described in this paper and the apparent containment of horizontal proliferation. States may choose not to proliferate for any number of reasons irrespective of these non-proliferation strategies. For example, states may simply see no need to consider nuclear weapons as part of the national security strategies. It is also possible that some states do believe that possessing nuclear weapons might quickly lead to a host of other security problems.

Thus, the fact that the "non-proliferation regime" has successfully delegitimated nuclear weapons among nations does not mean that states have lost interest in acquiring nuclear weapons or see it as wrong, "but rather that nations cannot voice this interest publicly in the international arena."²⁷ This simply means that the conventional approach to viewing proliferation phenomena is incomplete on its own. It fails to sketch a clearer picture of the proliferation landscape. The problem of complete verification prevents us from fully ascertaining the exact technical stages at which a potential nuclear power has arrived at. It also fails to take into consideration the rapid evolution of technology of nuclear weapons design and manufacture.

The Need to Reconceptualise Horizontal Proliferation in the Face of Changing Technology

In fact, such technological progress is not being given its due in the nuclear debate. The dynamic evolution of computer technology and the development of more efficient and cost effective manufacturing techniques have spilled into the field of nuclear weapons science, thus changing the whole meaning behind the concept of proliferation altogether. Technological advances are now allowing states to produce nuclear weapons:

- without conducting any tests,
- without any military deployment of weapons,
- through effective organised insulation of activities while denying the possession of any nuclear weapons.

Cohen and Frankel call this new situation the "opaque proliferation"²⁸ of nuclear weapons. It is a "silent spread" of nuclear weapons and their accompanying technology to non-nuclear states; a "hidden" process of proliferation that defies conventional ladder approaches such as CEIP's five-steps cited earlier.

While it easy to give credence to the ability of states to carry out the last three measures, it is both technologically and conceptually radical to bring in the idea that states do not have to conduct any physical tests involving the detonation of nuclear warheads. Weapon scientists are reported to have the ability to conduct virtual tests of their nuclear devices on computers.²⁹ Some states that are known to have conducted any nuclear tests and are suspected of having conducted these tests through computer simulation.³⁰

This new situation compels some scholars to quantify proliferation in terms of "latent nuclear states".³¹ By embracing the uncertain behaviour of states in the *realpolitik* sense, any country which embarks on a nuclear research program and/or who possess nuclear infrastructure for energy production (through their civil nuclear reactors) is already a potential proliferator. Incidentally, the concept of 'threshold' is not clear at all. In fact, there are *degrees* of threshold. Each stage of threshold possibly leads a state closer towards conventional threshold as seen in Diagram 3 on the next page.³²

Impact and Implications

Set against this new perspective, our previous definition of horizontal nuclear proliferation appears to be lacking in rigour. If horizontal nuclear proliferation appears to be both a quantitative and qualitative concept, it should be re-defined as *the spread of resources and technology to states which explicitly or implicitly seek to embark on a path towards nuclear threshold not previously crossed*. While it is beyond the scope and intention of this paper to flesh out an exhaustive list of countries that would possibly fall in the categories of possessing the necessary technical knowledge, running research programs and possessing civil nuclear reactors, a new head count based on the ACA Chart in Diagram 1 puts the number at between twelve to nineteen states based on our new notion of proliferation. But the immediate purpose of our discussion is to embrace the possibility that the number of proliferators is more than what current convention (or naivete) permits and to draw the implications.

Inductively, it is clear from our discussion that the "nth-country problem" remains. This is the view that the potential spread of nuclear weapons compounds the fear that the next world war might not be sparked off by the original nuclear powers but by the nth country to acquire the atomic bomb.³⁵ Buzan states the problem in these terms:

*It is the fear that some single country will, by acquiring nuclear weapons, trigger a cascade of acquisition by previously non-nuclear states. The 'n' here refers to the unknown number that this country would occupy in the historical sequence of states that have become nuclear powers.*³⁶

The author contends that the problem can also be seen as an $n-1$ th problem where many states already acknowledge opaque proliferation as a problem in their security calculations. Consequently, a certain fear is compounded among such states which can be easily translated into a pre-emptive acquisition of nuclear arms technology. Overall, both the n th and $n-1$ th problems are extremely dangerous today because unlike the Cold War era, many developing states in Asia and the Middle East wish to nuclearise not because they wish to adopt nuclear deterrence as a strategic policy but they do so on the hot passions of nationalism³⁷ requiring an upper hand over a historically drawn conflict with a neighbour.

Fighting Proliferation in the 21st Century: Changing Our Ways of Thinking

Some may argue that one way to fight the problem of both horizontal and vertical nuclear proliferation is to embolden the current strategies and mechanisms in Diagram 2 used earlier. However, pushing the pace of such activities can be counter productive bearing in mind that their political implementation run at their dragging pace for a logical reason. It is the logic of the international system based on the concept of sovereign and autonomous nation-states. In the international arena, states interpret international law, United Nation's resolutions, and treaties such as the NPT according to their national interests or goals.

Ironically, there are four common national goals that states share:³⁸

- security
- welfare
- national prestige and
- peace

However, conflict arises because these common goals are pursued differently according to the unique geography, history, culture, challenges, threats, and psyche of the state and its people. In the hard race for survival largely based on realistic premises, security, welfare and prestige are often pursued in absolute terms. The decision to proliferate is often based on good intentions of fulfilling these three goals. But the road to hell is often paved with good intentions.

Fundamentally, the psychological disturbance we feel about our extinction at the hand of the nuclear bomb often stems from an ethical standpoint. Consequently, our "new ways of thinking" must be founded on an ethical principle or set of principles. This paper proposes the principle of existentialism as a simple but empowering starting point for change. It has no real ideological or theistic content and simply propounds a value system on the basis that the choices we make lead either to the affirmation of our existence or to the erosion of it (leading to "nothingness" as an end state).³⁹ Actually, this perspective has no real newness to it. In the bid to avoid the often-repeated error of complacency of past empires such as ancient Rome, the notion of sustainability by the modern nation-state (in maintaining its success and power) has often been driven on by its subconscious fear of such extinction.

It should be our task in the new century to conscientiously stretch this idea shared by all states onto a common global security platform regarding the threat of nuclear weapons to all. Specifically, we must inject a greater ethical component into the nuclear weapons debate. As peace analysts, Fischer, Nolte and Øberg argue, "in our human hands technology and modern political power assume a completely new ethical significance" in the nuclear age.⁴⁰ As such, we have an existential choice on our future existence: that we can obliterate everything we have ever achieved in a near instant.

As a practical starting point, we should use our existential perspective in our conduct of arms control and diplomacy. Virtually all the containment measures described in Diagram 2 have no ethical content. Thus, it is difficult for arms control to counter the strength of calculated self-interest when there is no concrete ethical parameters to ensure their success.⁴¹ Policy-makers should find ways to make their arms control regulations morally compelling. The subject of ethics should be focused upon in official meetings and Track 2-type workshops regarding nuclear proliferation control.

Should the fruits of such hopes only appear in the long term, the daily conduct of inter-state relations (and more importantly, the negotiation of conflict) must exude the sensitivity that comes with ethical thinking. Diplomacy must cautiously tread along the tight rope between national self-interest and taking into account the cherished needs of others. Perhaps, the word "sensitivity" is lacking in strength and should be replaced by the concept of "humility owed to the excess of our power to act over our power to foresee and judge the consequences of our actions".⁴² The numerous bilateral tensions in Asia (Pakistan-India, China-Taiwan, North Korea-South Korea, Israel-Palestinian Authority, and North Korea-Japan) all involve nuclear weapons fueled by emotionally charged nationalism, unresolved antiquated differences and sheer arrogance. The Asia of the 21st century requires a statesman and soldier possessing a new kind of humility.

Western policy-makers should also set an example by approaching nuclear arms control from the basis of a genuine existential concern rather than the blatant attempt to maintain nuclear monopoly which only undermines the whole project. Asian states will approach these Western established norms with less suspicion if the latter will make the concerted effort to break away from their intention of sustaining a strategic advantage over Asian powers. Some experts feel that the embarkation of the US on their Theatre Missile Defence (TMD) and National Missile Defence (NMD) programmes reflect the Americans' fear of being squeezed out of the Asian corner of the military chessboard through China's medium range nuclear weapons. These programmes have allowed the US to secure its coastal flanks and cover all US bases in Northeast Asia.⁴³ The continued race for counter-measures will herald a return to a Cold War type arms race if left unchecked.

Conclusion

The current proliferation record, while stable, does not give us the same assurance anymore. The combined ingredients of inter-state realpolitik, rapidly evolving science and technology and the limitations of current containment strategies fuel the possibility of an Armageddon. Consequently, the definition of horizontal nuclear proliferation has to change altogether. In this way, we will find that fighting technology alone will not be the solution. A successful battle against horizontal nuclear proliferation must begin with the mind. We must come to terms with the ethical aspects of the problem which have often been ignored in the area of policy but which should form the backbone of political conduct. A simple but empowering ethical starting point suggested in this paper is to embrace an existential perspective towards nuclear weapons. We could

begin with this conceptual tool in the avenues of arms control and diplomacy. In the end, the qualitative difference between this century and the last will be determined by the ability for mankind to muster the mind and courage to practise the rhetoric of peace. If we can do so, we will not only help advance the evolution of our Westphalian international system into a form more noble than it has been since its birth 200 years ago; we will also save our souls.

Endnotes

1 According to Norris and Arkin of the Natural Resources Defense Council, the number of nuclear warheads worldwide dropped from 55,772 to 31,535 from 1991 to 2000, a decrease of about 43 percent. See Robert S. Norris and William M. Arkin, "NRDC Nuclear Notebook: Global Nuclear Stockpiles, 1945-2000," *The Bulletin of the Atomic Scientists*, March/April 2000, Vol. 56, No. 2, p. 79. [article on-line]. *The Bulletin of the Atomic Scientists On-line*. Accessed on 15 December 2000; available from <http://www.bullatomsci.org/issues/nukenotes/ma00nukenote.html> ; Internet.

2 According to data from official tests, a small 10-megaton bomb will obliterate everything within a radius of 6 kilometres around the blast point and leaves a poisonously radioactive crater more than 150 metres deep. The blast sets off a suffocating firestorm for a radius of 30 kilometres. More than 200 different radioactive compounds are created and attached to particles of debris which are swept into the air and form the familiar mushroom cloud. Should they spread uniformly, they produce lethal levels of radioactivity over 6000 square kilometres. See Austin Ranney, *Governing: An Introduction to Political Science*, 7th ed., (New Jersey: Prentice Hall, 1996) p. 431.

3 *Chambers English Dictionary*, 7th ed. (New York: W & R Chambers Ltd., 1992) pp. 73-74.

4 *Ibid.*, pp. 73-74.

5 Roger Hilsman, *From Nuclear Military Strategy to a World without War: A History and a Proposal* (Connecticut: Praeger, 1999). For the description of the six scenarios and their treatment, see Part IV, Chapter 14: "Armageddon: Six Scenarios of Nuclear War," pp. 148-166.

6 Barry Buzan, *An Introduction to Strategies Studies: Military Technology and International Relations* (London: Macmillan, 1987) p. 57. While it suffices to say that horizontal proliferation does involve the spread of nuclear weapons to a non-nuclear state, it is highly misleading to take this meaning in the literal sense. This is because, unlike conventional weapons proliferation, horizontal proliferation rarely involves direct transfer or trade in such devices. Empirically, there appears to be no concrete indication of direct trade in nuclear weapons between states at the point of writing. "The closest approaches to [direct nuclear weapons] trade have been the co-operation between the United States and Britain, and between the Soviet Union and China" after the World War II and in the 1950's respectively. For one, non-proliferation strategies such the Non-Proliferation Treaty are believed to hamper the wholesale transfer of nuclear weapons between states. Therefore, instead of direct arms transfer, the "[di]ffusion of [nuclear weapons] has taken place as a result of states acquiring the necessary knowledge, technology, material to undertake independent manufacture." See *ibid.*, pp. 58-59.

7 *Ibid.*, p. 39.

8 *Ibid.*, p. 58.

9 This official recognition is theoretically based on the ability of nuclear weapon states to adhere to the NPT; in particular Article VI which aims "to pursue nuclear disarmament in good faith." "The State of Nuclear Non-Proliferation" [article on-line]. *The Arms Control Association*. Accessed 30 November 2000; available from <http://www.armscontrol.org/FACTS/statefct.html#defacto> ; Internet. The data collected by the ACA is based on in-house information in addition to the data provided by the U.S. Arms Control and Disarmament Agency, Carnegie Endowment for International Peace, U.S. Department of Defense, International Atomic Energy Agency, Natural Resources Defense Council, and the Institute for Science and International Security.

10 If one is to consider the blatant nuclear tests conducted by North Korea in 1999, the final nuclear state count can be brought to nine.

11 "The State of Nuclear Non-Proliferation" [article on-line]. *Op cit.*

12 These five steps are taken from "Appendix B: Manufacturing Nuclear Weapons," in Leonard S. Spector, Mark G. McDonough et al., *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1995* (Washington D.C.: Carnegie Endowment for International Peace, 1995) p. 171.

13 "Appendix B: Manufacturing Nuclear Weapons," in Leonard S. Spector, Mark G. McDonough et al., *op cit.*, p. 171.

14 Richard L. Garwin, "Don't neglect new weapons plant," in *The Bulletin of the Atomic Scientists* [journal on-line]. Accessed 28 November 2000; available from <http://www.bullatomsci.org/issues/1992/may92/may92.clarke.html> ; Internet.

15 Benjamin Frankel, "An Anxious Decade: Nuclear Proliferation in the 1990s," in , in Benjamin Frankel ed., *Opaque Nuclear Proliferation: Methodological and Policy Implications* (Great Britain: Frank Cass, 1991), p. 4.

16 "The Problem." [article-online]. *The Nuclear Control Institute*. Accessed 28 November 2000. Available from <http://www.nci.org/nci-pro.htm> ; Internet.

17 The costs cited in this paragraph are based on Frankel's calculations and research. See Benjamin Frankel, *op cit.*, p. 3.

18 This table is based on Lewis A. Dunn's chart ("Non-proliferation measures and institutions") devised in 1991. It has been modified and updated since the original was written in the late Cold War period. For example the concept of *US Regional Organisations* used here replaces *US Alliances* used by Dunn. The Missile Technology Control Regime (MTCR) and Nuclear Weapon Free Zone (NWFZ) approaches have been added in as well. The concept a *Soviet Alliance* serving as a firebreak measure has been omitted from the original taxonomy. See Lewis A. Dunn, *Containing Nuclear Proliferation*. International Institute for Strategic Studies Adelphi Paper 263 (London: Brassey's for the International Institute for Strategic Studies, 1991).

19 "Appendix D: Nuclear Supplier Organizations: The Non-Proliferation Treaty Exporters Committee and the Nuclear Suppliers Group," in Leonard S. Spector, Mark G. McDonough et al., *op cit.*, pp. 179-183.

20 Taken from "Appendix E: The Missile Technology Control Regime," in *ibid.*, pp. 185-187.

21 "Appendix C: International Atomic Energy Agency (IAEA) Safeguards," in *ibid.*, pp. 177-178.

22 Measures and description condensed from Virginia I. Foran, *op cit.*, pp. 186-187.

23 Benjamin Frankel, *op cit.*, p.4.

24 Virginia I. Foran, "Preventing the Spread of Arms: Nuclear Weapons," in Jeffrey A. Larsen and Gregory J. Rattray eds., *Arms Control: Towards the 21st Century* (Boulder, Colorado: Lynne Rienner, 1996)p. 185.

25 "Appendix C: International Atomic Energy Agency (IAEA) Safeguards," in Leonard S. Spector, Mark G. McDonough et al., *op cit.*, p. 177.

26 Both scholars and politicians are equally inclined to repeat this kind of fallacious logical argument. Richard Garwin provides an example of another such spurious argument relevant to nuclear issues is that *nuclear weapons have prevented another war*. See Richard L. Garwin, "Don't neglect new weapons plant," in *The Bulletin of the Atomic Scientists* [journal on-line]. Accessed 21 August 1999; available from <http://www.bullatomsci.org/issues/1992/may92/may92.clarke.html> ; Internet.

27 Avner Cohen and Benjamin Frankel in Benjamin Frankel, *op cit.*, p. 16.

28 *ibid.*, pp. 14 - 44.

29 Hugh Gusterson, *Nuclear Rites: A Weapons Laboratory at the End of the Cold War* (Los Angeles: University of California Press, 1996) p. 229.

30 Leonard S. Spector, Mark G. McDonough et al., *op cit.*, p. 136.

31 Ted Greenwood, *op cit.*, p. 20.

32 While the exact details of this model (modified by the author) exceeds the scope of this paper, it suffices to say for now that it tells us there exists a more radical perception of proliferation. This view holds equal weight for both analysts and policy-makers. *Degrees of threshold* here is crudely analogous to saying that the possession of the knowledge to build a bow and arrow brings one closer to actually having it; all one needs next is to get the materials before assembling it and then firing the arrow. It is intuitively possible to say that people do regard these stages as threats and react to them in turn. Thus, in knowing that an opponent has the materials to build the weapon described, one also procures the materials in turn. Worst still, one races to build them first whether or not the potential adversary does so or changes his mind.

33 The essence of the model the eight points of escalation - is taken from Cohen and Frankel's description of the original Manhattan Project Model. The classification of these points into virtual weapon states/latent nuclear states and 'real' nuclear powers is this author's contribution. Avner Cohen and Benjamin Frankel, *op cit.*, pp. 17-18.

34 As embodied in the NPT Article VI as well as in traditional discourse on nuclear proliferation (traditional in the sense of Buzan's definition of proliferation used in this paper).

35 Austin Ranney, *op cit.*, p. 431.

36 Barry Buzan, *op cit.*, p. 64.

37 Paul Bracken, *Fire in the East: The Rise of Asian Military Power and the Second Nuclear Age* (New York: HarperCollins Publisher, 1999) pp. 89-90.

38 Austin Ranney, *op cit.*, p. 410.

39 The reader will realise the power this perspective has on our rationality by conducting a simple exercise: first, think of all one's achievements in life, of all one's cherished family and friends, and of the privilege of the senses in experiencing the world in all its aspects. Then, consider the thought of losing these privileges through an accidental death or suicide. Poets and writers sometimes call this conclusion a tragedy.

40 Dietrich, Fischer, Wilhelm Nolte, and Jan Øberg, *Winning Peace: Strategies and Ethics for a Nuclear-Free World* (New York: Crane, Russak & Company, 1989) p. 174.

41 The author likens this problem to the similar infringement of intellectual copyright laws in the area of video and software piracy. There is no real ethical compulsion not to buy pirated software against the fact that it is cheaper than the original. Saying it is simply 'wrong' to do so has no conviction to most people.

42 *Ibid.*, p. 176.

43 While the issue of TMD and NMD is not covered in his book, Paul Bracken provides an interesting insight into American concerns over China's growing nuclear prowess and in general, the rise of Asian military powers. See Paul Bracken, *op cit.*, especially pp. 151-153.



LTA (NS) Gerard Graham Ong is currently an officer with the Ministry of Information and the Arts. He graduated with Honours in Political Science from NUS and will be pursuing his Masters in International Relations at the London School of Economics on a Masters Scholarship under the Institute of South East Asian Studies. He previously served as a scout platoon commander in 46 SAR and has just completed his Combat Intelligence Officer's Course at the School of Military Intelligence. He will serve his National Service as an S2 with 466 SAR.

Synopses of Ten Commendation Award Essays

- **Unclenching of the Fisted Hand: Globalisation and Military Multilateralism**

by COL Jimmy Tan, MINDEF

With the concept "might is right" made *passe*, an invisible hand, is asserting itself. The author contends that globalisation has outgrown geopolitics so quickly that the role of the military is being questioned. He examines the stand of the East Asian militaries on this issue.

- **War: An Inevitable Feature of International Relations?**

by MAJ Jiwataram J Ramchandani, HQ RSAF

The author examines both the liberal and realist views of war. He also discusses the reasons why nations go to war and attempted simple extrapolation from the historical cycles of peace and war. He concludes optimistically that lessons from previous conflicts would move countries up the ladder of peace.

- **Does Military Alliance Have Any Utility in Southeast Asia?**

by MAJ Low Yong Joo, HQ RSN

ASEAN has been hailed as a successful regional council. While this may be the case, it has stopped short of promoting military co-operation. The paper discusses the reasons against the creation of a military alliance and attempts to examine whether an alliance should be formed.

- **Creative Destruction: How It Applies to the SAF**

by MAJ Tan Boon Kiat, Joseph, APD, HQ RSAF

The author examines the concept of creative destruction and discusses a strategy for revolutionary changes through the process of creative destruction. Written from the viewpoint of small armed forces, the author analyses the applicability of this concept to the SAF.

- **The Full Range Leadership Model and Its Application to the Singapore Armed Forces**

by CPT Chan I-Harn Alvin, Singapore Infantry Regiment (SIR)

The author discusses the full range leadership model which encompasses elements of transformational, transactional and non-transactional leadership and applies this model to the SAF. He opines that the Full Range Leadership Model is relevant to the SAF.

- **Defence Co-operation in ASEAN: Politics of Inaction**

by CPT Alfred Fox, Singapore Armoured Regiment (SAR)

The essay examines the possibility of defence co-operation among ASEAN members. The author also highlights the problems and advantages of such co-operation and attempts to offer an outlook on future defence co-operation.

- **Japan's International Role in the New Millennium**
by CPT Leong Wai Kwan, Edwin, RSN

Should and can Japan assume responsibility as an economic superpower? The author analyses Japan's economic, political, diplomatic and military roles and evaluates the implications of these roles in a dynamic and volatile world.

- **Retention of Junior Officers: Strategic Human Resource Challenges for the Singapore Armed Forces in the New Millennium**
by CPT Wee Choon Boon, OCS

This article examines the human resource challenges facing the SAF in the new millennium particularly in the retention of junior officers. The author examines the reasons why some officers leave the SAF and provides suggestions on changing or improving existing HR policies to boost their retention in the SAF.

- **Innovation and the Asymmetrical Advantage**
by LTA (NS) Toh Boon Ho

The author posits that military organisations must be sensitive to global developments and innovate constantly. While engaging in the innovation process, a military organisation should build on its core competencies to better safeguard the state and its people.

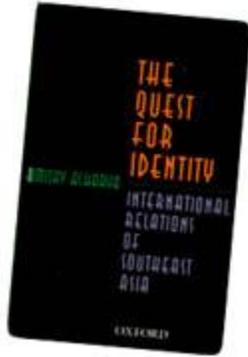
- **The Controversy of Critical Battles Which Defined the German Russian War of 1941 1943**
by LTA (NS) Wong Tze Yung

The author contends that while the battles of Moscow and Stalingrad were significant in their own right, the pivotal point in the war on the Eastern Front during the Second World War was the Battle of Kursk.

Book Review:

The Quest for Identity: International Relations of Southeast Asia by Amitav Acharya

Reviewed by J.D. Kenneth Boutin



Amitav Acharya, the author of *The Quest for Identity*, is one of the foremost scholars of the international relations of Southeast Asia. He has published very widely on this (and other) subjects, and in his latest contribution his extensive knowledge of international relations and Southeast Asia in terms both of contemporary trends and developments and the historical evolution of the region enable him to provide a highly original and insightful analysis of the international relations of this region.

Professor Acharya employs a distinctive approach: he situates regional international relations within the local environment, explaining regional trends in terms of broad historical forces. *Quest for Identity* illustrates how forces such as nationalism and regionalism have combined to shape the regional environment for international relations. As the title suggests, the author devotes particular attention to the question of regional "identity," particularly in terms of the development of regional institutions such as the Association of Southeast Asian Nations (ASEAN). Professor Acharya points out that the boundaries of the region known today as Southeast Asia and the manner in which the states involved have interacted with each other have by no means been predetermined, and that there is a "rich history" of attempts at defining this region.

Quest for Identity convincingly argues that the international relations of Southeast Asia revolve around deliberate attempts by regional leaders to develop a common identity in the face of "the region's immense diversity and myriad countervailing forces" emanating from within and outside Southeast Asia. Southeast Asia has experienced a turbulent history, not least due to the intervention of colonial and post-colonial powers intent on securing their own interests. In the process, forces for conflict and fragmentation have been set against forces for integration and cohesion.

The author begins by examining pre-colonial patterns of inter-state relations in Southeast Asia and goes on to examine the interaction of nationalism and regionalism in the context of the Cold War regional order. From there, the book proceeds to focus on the evolution of regional organization. This involves a selective historical analysis of the broad strategic, political and economic forces that have influenced Southeast Asian international relations at the intra-regional level. The scope of Professor Acharya's analysis encompasses the Association of Southeast Asia (ASA) of 1961 through the evolution of ASEAN and up to the present time. *Quest for Identity* concludes by examining contemporary regional international relations in terms of both security and economics.

This book constitutes a valuable study of Southeast Asian international relations. *Quest for Identity* provides a very accessible overview of efforts to promote regional organization, and provides a basis for

understanding the complexities of regional international relations in the context of globalization and the post-Cold War international order. This book illustrates the impact of Southeast Asia's rich history from the pre-colonial period to the Second World War, decolonization and the Cold War - on the way in which regional states interact with each other. In the process, this study helps us to understand the evolution and features of the region that has come to be known as Southeast Asia.

As well as explaining the history of regional international relations, *Quest for Identity* provides a basis for analyzing trends and developments operative at the present time. These range from nationalism and regionalism to contemporary support for state-building. This volume is particularly valuable in terms of its contribution to our understanding of contemporary security in Southeast Asia. Not only does it illustrate the basis of understandings of security in many regional states, but it also explains the basis for regional cooperation in the attainment of security objectives, demonstrating that the "security multilateralism" that is increasingly important in the context of Southeast Asia has not developed in a vacuum. In the process, *Quest for Identity* informs us of the future potential for regional security cooperation.

Quest for Identity is a timely contribution to the Southeast Asia international relations literature. This well-written and very readable book is highly recommended for anyone interested in the context for the contemporary regional security environment. This volume constitutes a welcome alternative to much of the extant scholarship on the region, which is ethnocentric, failing to consider the impact of the distinct features and history of Southeast Asia.

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

The Quest for Identity: International Relations of Southeast Asia

Amitav Acharya

DS525.8 ACH



Dr J. D. Kenneth Boutin is a Ford IDSS Postdoctoral Fellow in Asian Security at the Institute of Defence and Strategic Studies. He holds a Phd in Political Science from York University in Toronto, Canada (2001).