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PENGUASAAN INFORMASI DI DALAM KONSEP NETWORK CENTRIC WARFARE (NCW) DAN IMPAKNYA KEPADA TD

Oleh Mej Mohamad Rudi bin Othman

PENDAHULUAN

'Sementara tujuan kita kekal akan tetapi keupayaan Tentera Darat haruslah tidak sebegitu. Peperangan sentiasa berubah; kita mestilah sentiasa di hadapan di dalam setiap perubahan untuk menjadi suatu angkatan yang dapat memenuhi sebarang keputusan negara'.

General Dennis J. Reimer¹

Maklumat atau Informasi telah menjadi perkara penting dalam setiap operasi ketenteraan sepanjang zaman. Sejarah telah membuktikan kepentingannya sebagai penyumbang kepada kejayaan sesuatu pertempuran. Komander-komander perang sentiasa mempunyai kelebihan apabila ingin membuat sesuatu keputusan sekiranya informasi yang diperolehi lengkap. Penulisan-penulisan daripada ahli-ahli strategik terkenal seperti Sun Tzu dan Clausewitz banyak mengatakan kepentingan informasi di dalam peperangan. Malah penulisan Sun Tzu yang dibuat lebih 2,500 tahun dahulu menekankan kepentingan informasi dalam peperangan. Di antaranya adalah seperti berikut:

*'Ketahuilah berhubung musuhmu dan ketahuilah berhubung dirimu; di dalam beratus pertempuran kamu tidak akan mengetahui erti tewas. Apabila kamu jahil terhadap musuh tetapi mengetahui dirimu sendiri sahaja, peluang kejayaan atau kekalahan adalah seimbang. Namun jika kamu jahil terhadap kedua-duanya sekali, maka tentunya kamu akan tewas pada setiap pertempuran.'*²

Penulisan Carl Von Clausewitz pula memperkenalkan artikulasi kabus dan geseran dalam pengajian peperangan.

'Informasi yang umumnya tidak lengkap mengundang permasalahan khusus: contohnya tindakan-tindakan yang berlaku seperti dalam kesuraman senja...adalah juga seperti kabus. Peperangan penuh dengan ketidaktentuan; tiga suku daripada faktor-faktor tindakan yang berlaku di dalam peperangan dibalut oleh kabus, tiada ketentuan sama ada banyak atau sedikit..... Komander perang harus bekerja dalam keadaan kegelapan, di mana kesimpulan terbaiknya terhadap sesuatu kejadian tidak selalunya tepat; dan pada mana perubahan yang sering berlaku bukan dari yang biasa dihadapinya'.³

Berkurun lamanya organisasi ketenteraan direkabentuk untuk menghadapi situasi kabus peperangan ini. Kabus yang dimaksudkan adalah ketidaktentuan. Ketidaktentuan berhubung di mana setiap seseorang, apa keupayaan mereka dan tujuan asal mereka. Sehingga seseorang komander itu tidak mengetahui kedudukan angkatan tenteranya sendiri apalagi informasi berhubung aktiviti, rancangan dan tindakan musuh dengan cepat. Oleh itu, proses membuat keputusan di dalam peperangan berhadapan dengan kos membuat kesilapan yang sangat besar. Kerana itulah, tidak memerlukan jika konsep operasi ketenteraan, organisasi, doktrin dan latihan sentiasa menekankan kepada aspek pengurangan risiko dan efek yang dikaitkan dengan kabus atau ketidaktentuan ini. Kabus dan ketidaktentuan ini juga boleh dimanfaatkan oleh musuh untuk membuat kejutan yang besar.

¹ Gen Dennis J. Reimer and Secretary of the Army Togo D. West, Jr., Force of Decision: Capabilities for the 21st Century, Washington DC, Department of Army, 1996. MS i.

² Samuel B. Griffith, Sun Tzu, The Art of War, Oxford University Press, Oxford, 1963, ms 90.

³ Carl Von Clausewitz , On War, Penguin Books, London, 1988, ms 32.

'NETWORK-CENTRIC WARFARE' (NCW) DAN INFORMASI

Teknologi informasi masa kini mampu menawarkan penyelesaian bagi mengurangkan kabus atau ketidaktentuan ini. Teknologi informasi masa kini telah melalui peralihan yang asas daripada pengkomputeran pemusat-an-permukaan (platform-centric computing) kepada pengkomputeran pemusat-rangkaian (network-centric computing). Pengkomputeran pemusat-permukaan muncul melalui penyebaran dan pertumbuhan teknologi komputer peribadi. Pelaburan yang berlaku di dalam sektor teknologi informasi dibantu dengan proses kajian dan pembangunan pengeluaran yang pesat telah menjurus kepada kemunculan pengkomputeran pemusat-rangkaian.

Anjakan ini lebih jelas dengan perkembangan kemajuan internet, intranet dan extranet. Pengguna-pengguna internet tanpa ragu-ragu dapat mengenal istilah dan maksud 'transmission control protocol/internet protocol (TCP/ IP), hypertext transfer protocol (HTTP), hypertext markup language (HTML), Pelayar Jaringan (seperti Netscape Navigator dan Microsoft Internet Explorer) dan sebagainya. Teknologi ini digabungkan dengan capaian data berkelajuan tinggi dan teknologi-teknologi rangkaian data berkelajuan tinggi juga telah menjurus kepada pengkomputeran pemusat-rangkaian. Kandungan informasi pada masa kini boleh dibuat, diagih dan dengan mudah dapat dieksploritasikan melalui suasana pengkomputeran global yang bercampur serta canggih.

Kemajuan dan pembangunan ini juga diaplikasikan didalam organisasi ketenteraan dan dinamakan dengan pelbagai istilah oleh pelbagai negara; Peperangan Pemusat-an- Rangkaian (Network-Centric Warfare - NCW) adalah istilah yang digunakan oleh Amerika Syarikat, Peperangan Pemboleh Rangkaian (Network-Enabled Warfare - NEW) digunakan oleh Norway, Australia dan Belanda, Keupayaan Pemboleh Rangkaian (Network-Enabled Capability - NEC) digunakan oleh Britain dan Pemerintahan dan Kawalan Berasaskan Pengetahuan (Knowledge Based Command and Control) yang diistilahkan oleh Angkatan Tentera Singapura.

NCW adalah suatu konsep peperangan. Menurut John J Garstka, Jabatan Arah Staf Bersama Untuk Sistem C4 berpusat di Pentagon, NCW adalah operasi ketenteraan yang bergantung kepada kekuatan rangkaian. NCW menyediakan sesuatu angkatan itu dengan capaian di dalam suatu domain informasi yang baru, yang dahulunya tidak dapat dicapai. Kebolehan untuk beroperasi di dalam suasana ini memberikan kelebihan baru kepada pihak tentera yang memperolehi setiap informasi ini di dalam pertempuran. Seterusnya kelebihan ini akan meningkatkan kuasa pertempuran melalui penyelarasaran sesama sendiri atau dengan operasi-operasi pemusat-rangkaian yang lainnya.⁴

Operasi berdasarkan NCW, bukan sahaja memfokuskan peperangan pada tahap taktikal sahaja malah ianya memberikan impak setiap tahap aktiviti ketenteraan daripada taktikal kepada strategik. Pada tahap operasional, operasi yang berdasarkan NCW menyediakan pemerintah atau komander dengan keupayaan untuk menjana ketepatan efek dan pertempuran serta membina kemungkinan tindakan pihak lawan.

Bukti penguasaan yang dapat diberikan melalui NCW dapat dilihat melalui banyak ujikaji dan eksesais malah melalui pertempuran-pertempuran yang berlaku baru-baru ini contohnya semasa peperangan di Iraq dan Afghanistan⁵. Bukti yang dikumpul sehingga kini menyokong dan menunjukkan perkaitan di antara perkongsian informasi, meningkatkan tahap kesiagaan dan yang penting ianya berupaya menggandakan kuasa tempur. Selain itu, ini juga menunjukkan perubahan yang agak ketara berhubung taktik, teknik dan prosedur bagi sesebuah angkatan mengefektifkan kelebihan informasi.⁶

Sesebuah angkatan berkeupayaan NCW sebenarnya dihubungkan dengan infrastruktur dan infostruktur yang sangat efektif. Angkatan ini juga berupaya untuk berkongsi dan bertukar-tukar informasi di antara elemen-elemen pertempuran yang lain contohnya kepada setiap pengesan (sensors) tanpa mengira permukaan, penembak atau penggempur tanpa mengira perkhidmatan

⁴ Isaak Zulkarnaen, 'NCW Systems- Development Continues', Asian Defense Journal , June 2004 ms 16.

⁵ J B Walter, Operation Iraqi Freedom, Tom Doherty Associates LLC, New York, 2003 ms 33.

⁶ Isaak Zulkarnaen, 'NCW Systems- Development Continues', Asian Defense Journal , June 2004 ms 16.

sama ada angkatan di darat, di laut maupun di udara; dan pemerintah atau komander dan organisasi-organisasi sokongan lainnya tanpa mengira lokasi. Ringkasnya, angkatan yang dilengkapkan dengan NCW ini berupaya untuk saling beroperasi, sebuah angkatan yang mempunyai capaian secara global kepada sebarang informasi pada ketika dan di mana diperlukan.

Sememangnya pada tahun 1983, Alvin Toffler dianggap seorang futuris! Beliau telah mengemukakan suatu pandangan yang terlalu jauh ke hadapan, melalui bukunya beliau mengatakan ‘...kita adalah anak-anak transformasi selanjutnya, gelombang ketiga. Kita meraba-raba di dalam mencari perkataan untuk menerangkan penguasaan penuh yang sampai kepada perubahan yang luarbiasa. Sesetengah mereka bercakap tentang zaman angkasa, zaman informasi, era elektronik...’⁷. Beliau menambah ‘Bom informasi sedang meletup di tengah-tengah kita, menyirami kita dengan serpihan imej dan secara drastiknya mengubah cara persepsi setiap dari kita dan tindakan-tindakan ke atas dunia peribadi kita’.⁸ Dan kini telah Toffler ini bukan lagi boleh dianggap futuristik malah operasi besar-besaran tentera Amerika di Iraq semasa Operasi ‘Iraqi Freedom’ yang dilancarkan pada tahun 2003 telah menjadi petunjuk bahawa dunia peperangan sedang berada di dalam transformasi gelombang ketiga dan gelombang ini akan terus menjadi cabaran bagi semua angkatan perang di dunia jika mereka terjerumus ke dalam konflik bersenjata.

Kini NCW bukan hanya boleh dilihat sebagai suatu teori atau retorik malah ianya merupakan sesuatu yang sedang berlaku sekarang. Contohnya; teknologi mengesan ancaman dari serangan udara pada pengesan seperti radar. Pengesan ini akan menjana kesiagaan sebelum tindakan susulan dilaksanakan. Ancaman yang bakal dihadapi ini juga perlu dikongsi oleh pasukan kapal terbang pejuang Tentera Udara dan terup Tentera Darat agar berada pada tahap kesiagaan yang sama serta bertindak dengan terurus dan terarah sekiranya serangan tersebut berlaku. Kaedah ini memerlukan koordinasi yang sangat rumit dan penyelesaiannya dapat dilaksanakan melalui teknologi yang dinyatakan melalui konsep NCW. Oleh itu, tentera yang dapat menguasai informasi, akan menguasai situasi dan seterusnya dapat menguasai kesiagaan pada setiap

lapisan ruang tempur. Konsep NCW ini adalah suatu transformasi baru yang berubah secara evolusi dan bukan secara revolusi. Ianya muncul daripada kepesatan pembangunan teknologi maklumat dan komunikasi yang diaplikasikan di medan tempur.

Transformasi yang pesat berlaku ini sebenarnya memerlukan perubahan baru dari segi pengstruktur semula organisasi, membangun angkatan NCW, struktur TD yang berkonsep NCW dengan kemampuan kewangan yang terhad, masalah yang bakal dihadapi, dilema dan pengaruh-pengaruh lainnya.

PENGUASAAN INFORMASI

Matlamat utama di dalam NCW adalah Penguasaan Informasi (Information Superiority) di dalam ruang tempur seperti juga sektor perdangangan dan industri menggunakan penguasaan informasi di dalam ruang pasaran.⁹ Dalam NCW, penguasaan ini dapat dicapai dengan penekanan kepada keupayaan pengesan (sensors) seperti Radar atau UAV yang dirangkaian secara bersepadu untuk membolehkan kesiap-siagaan dikongsi bersama.

Adalah jelas pada ketika ini, kemunculan teknologi dan konsep NCW ini memberikan impak yang besar kepada TD di dalam menjalankan tugas menjaga keselamatan dan kedaulatan Negara. NCW memfokuskan dengan selari tiga domain utama di dalam peperangan dan berupaya untuk berinteraksi di antara satu sama lain. NCW melibatkan rangkaian ketiga-tiga domain ini dan ciri-cirinya adalah seperti berikut:

a. **Domain Fizikal**. Setiap elemen di dalam sesuatu angkatan itu dirangkaikan dan mencapai tahap saling beroperasi (*interoperability*) dan saling berpautan (*connectivity*) yang tinggi tanpa sebarang gangguan melalui jaringan komunikasi yang selamat.

b. **Domain Informasi**. Angkatan ini berkeupayaan untuk berkongsi, mencapai dan melindungi informasi sehingga ke suatu tahap di mana ia mampu menubuh, menggunakan dan mengekalkan kelebihan informasi yang dimilikinya ke atas pencabar

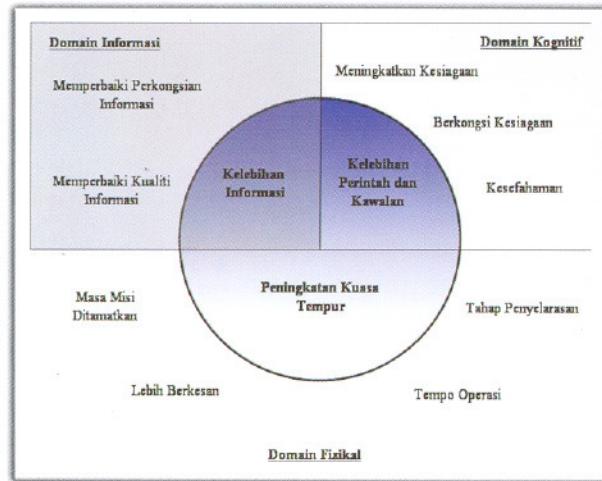
⁷ Alvin Toffler, *The Third Wave*, Pan Books, London, 1981, ms 23.

⁸ Alvin Toffler, *The Third Wave*, Pan Books, London, 1981, ms 167.

⁹ Isaak Zulkarnaen, ‘NCW Systems- Development Continues’, Asian Defense Journal , June 2004, ms 16.

(musuh). Angkatan ini juga berkeupayaan untuk bekerjasama di dalam domain informasi, di mana membolehkan sesuatu angkatan itu memperbaiki informasinya melalui proses-proses perencaman, pengumpulan dan analisa.

c. **Domain Kognitif.** Angkatan ini berupaya untuk membangunkan tahap kesiapsiagaan yang berkualiti dan berkongsi berhubung maklumat tahap kesiapsiagaan ini. Angkatan ini juga dapat berkongsi kesefahaman termasuk perkara-perkara berhubung maksud dan keperluan pemerintah atau Komander. Angkatan ini juga berupaya untuk mewujudkan penyatuan dan penyelarasian sendiri (self-synchronize) berhubung operasi yang dijalankannya. Hubungan setiap domain ini dapat ditunjukkan seperti rajah 2.1 di bawah ini:

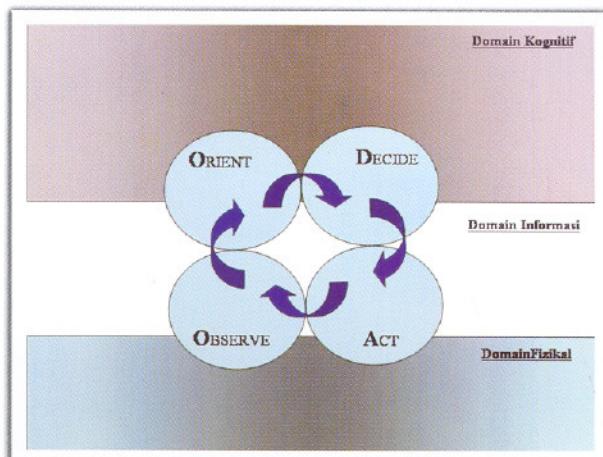


Rajah 2.1: Hubungan Domain dan Peningkatan Kuasa Tempur

Sumber: Dipetik dari buku David S. Alberts, *Understanding Information Age Warfare*, Library of Congress Cataloging-in-Publication Data, Washington, 2001.

Selain daripada itu, angkatan ini juga perlulah berupaya untuk melaksanakan operasi informasinya melalui domain-domain ini untuk mencapai efek penyelarasian di dalam setiap satu domain.¹⁰ Ringkasnya domain-domain ini akan memberikan

suatu putaran OODA¹¹ bagi konsep Perintah dan Kawalan sesuatu angkatan. Hubungan ini dapat ditunjukkan dengan lebih jelas seperti di Rajah 2.2, di bawah:



Rajah 2.2: Hubungan Domain dan Putaran OODA

Sumber: Dipetik dari buku David S. Alberts, *Understanding Information Age Warfare*, Library of Congress Cataloging-in-Publication Data, Washington, 2001.

Bagi Angkatan Tentera Amerika, konsep NCW ini dinyatakan dengan jelas di dalam kertas kerja yang dibentangkan kepada pihak kerajaan melalui 'Joint Vision 2010' atau JV2010¹². Ia memperkenalkan kemunculan konsep aturgerak yang dominan, ketepatan, pengurusan logistik yang terfokus dan dimensi perlindungan yang menyeluruh serta keupayaan penguasaan informasi.

Umumnya potensi di antara konsep operasi JV2010, penguasaan informasi dan NCW boleh diuraikan dengan mengkaji arkitektur operasi yang secara efektifnya menghubungkan pengesan, pemerintahan dan kawalan serta pemusnah untuk meningkatkan kuasa tempur.

Sistem NCW membolehkan setiap elemen pertempuran berinteraksi secara bersepadu di

¹¹ Putaran OODA bermaksud 'Orient, Observe, Decide and Act' iaitu konsep asas membuat keputusan yang diamalkan oleh Angkatan Tentera Amerika di dalam sistem Perintah dan Kawalannya.

¹² JV 2010 merupakan dokumen yang menerangkan proses penstrukturkan komprehensif TD AS di dalam menyesuaikan perubahan teknologi di dalam menghadapi cabaran era informasi di dalam peperangan masa hadapan.

¹⁰ David S. Alberts (et al.), *Understanding Information Age Warfare*, Library of Congress Cataloging-in-Publication Data, Washington, 2001. ms 58.

dalam suatu rangkaian dengan satu matlamat yang sama yang sebelum ini tidak pernah dapat dilaksanakan. Umumnya elemen-elemen ini disatukan di dalam bentuk perisian aplikasi yang pada masa kini dinyatakan sebagai C4ISR (*Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance*) atau Pemerintahan, Pengawalan, Komunikasi, Komputer, Perisikan, Pengawasan dan Peninjauan. Tentera di seluruh dunia sedang memberikan keutamaan di dalam perolehan system C4ISR yang terkini bagi meningkatkan keupayaan masing-masing. Ini merupakan hasil daripada pelajaran yang telah diperolehi daripada operasi yang diketuai oleh Amerika di Iraq dan Afghanistan yang membuktikan C4ISR merupakan elemen terpenting di dalam merealisasikan evolusi NCW.¹³ Hasil daripada itu, pembangunan peralatan ketenteraan di pasaran antarabangsa pada masa kini juga menitikberatkan keupayaan ini. Malah TD sendiri sedang mengembangtenaga di dalam merealisasikan keupayaan ini. Perolehan Sistem Pelancar Roket Berganda ASTROS, kereta kebal PT 91-M, sistem persenjataan misil JERNAS dan beberapa perolehan sistem persenjataan lainnya dilengkapi dengan system teknologi maklumat yang canggih serta berasaskan NCW. Dan TD juga sedang berusaha dengan giat di dalam mengintegrasikan sistem-sistem ini agar dapat mewujudkan suatu sistem C4ISR yang tersendiri dan bersepada.

SISTEM KOMUNIKASI

Sistem komunikasi adalah elemen paling utama dan penting di dalam merealisasikan konsep NCW ini. Persaingan antarabangsa dari sudut sektor komersil awam pada ketika ini secara umumnya telah memandu pembangunan sistem komunikasi ketenteraan. Persaingan ini telah menjurus kepada kepesatan pembangunan yang begitu pantas. Oleh itu cabaran yang dihadapi adalah bagi terus mengikuti dan menturuti perkembangan ini. Faktor utama bagi NCW adalah mengintegrasikan sistem komunikasi ini sebagai sebuah rangkaian yang bersepada yang berupaya menyokong setiap bentuk media contohnya; suara, teks, imej, video, faksimili dengan minima penghantaran yang saling beroperasi dengan sistem komunikasi yang

ada sekarang (*legacy system*). Selain daripada itu, sistem ini pula perlulah terjamin dari sudut keselamatan komunikasi, lasak, boleh dipercayai, memenuhi spesifikasi ketenteraan.

Dari sudut lainnya pula, lebarjalur (*bandwidth*) merupakan satu lagi cabaran yang penting di dalam sistem komunikasi. Selain daripada keperluan jalur lebar yang tidak terbatas untuk penyaluran informasi; perkongsian jalur lebar dengan sistem komersil yang lainnya seperti sistem GSM (*Global System for Mobile Telecommunications*), 3G, Wi-Fi, satelit dan sebagainya juga merupakan cabaran-cabaran baru yang perlu dihadapi bagi merealisasikan NCW. Semua sistem komersil yang dinyatakan ini bermula daripada sektor awam dan evolusinya akan berterusan. Oleh itu, TD perlu mengambil perhatian berhubung evolusi ini dan merancang keperluan selanjutnya. Berkemungkinan juga cara penggunaan komunikasi di dalam pertempuran perlu diubah selain menerima secara terus teknologi komersil yang bergerak pantas ini.

TD DAN NCW

Misi TD untuk beralih kepada angkatan berkeupayaan NCW banyak bergantung kepada kemahiran setiap anggota, peralatan dan organisasi yang diperlukan pada masa hadapan. Kewujudan TD adalah untuk terlibat dalam peperangan atau menangani konflik bersenjata dalam menjaga kedaulatan dan kepentingan strategik negara. Umumnya TD melaksanakan tugas untuk bertempur di dalam peperangan. Secara prinsipnya, atur gerak TD merupakan penggunaan kekerasan yang terancang, terurus serta berfokus bagi mencapai sesuatu objektif.¹⁴ Prinsip inilah membezakan organisasi, kemahiran setiap peringkat anggota dan peralatan-peralatan yang digunakan oleh TD daripada agensi-agensi lainnya. Namun, tiada suatu organisasi pun yang mahu diselubungi dengan ketidaktentuan berkenaan masa hadapannya. Begitu juga dengan TD. Pandangan dan peredaran dunia perlu diperhatikan dengan terperinci agar TD sentiasa berupaya untuk menempatkan dirinya sejajar dengan pembangunan global. Beberapa TD negara-negara maju seperti Amerika, Britain, Jerman dan sebagainya; telah mengenalpasti

¹³ Russel James, Asian Defence Journal, Jan/ Feb 2005 ms 12.

¹⁴ J. Mohan Malik (ed), *The Future Battlefield*, Deakin University Press, Victoria, 1997, ms 185.

corak atau 'trend' masa hadapan aturgerak TD masing-masing pada masa hadapan. Contohnya; mewujudkan sebuah angkatan yang kecil namun berupaya diaturgerakkan dengan kekerapan yang tinggi, melaksanakan pelbagai tugas, penekanan terhadap keupayaan untuk melaksanakan misi-misi Operasi Bersama dengan perkhidmatan-perkhidmatan lainnya serta saling beroperasi dari sudut perkongsian informasi secara elektronik melalui konsep NCW. Oleh itu, corak atau 'trend' masa hadapan perlu diramalkan sepetimana kata-kata Mark Twain 'Ramalan memudahkan kamu untuk memandu masa hadapan dengan jelas'. Corak ini akan merumuskan doktrin yang akan digunakan.

TD British mendefinisikan doktrin sebagai 'ekspresi formal pemikiran dan pengajian ketenteraan, yang diterima dan digunakan pada sesuatu masa tertentu, yang meliputi konflik masa kini dan masa akan datang dan persiapan TD untuk menangani konflik tersebut serta kaedah untuk menghadapi sesuatu situasi itu bagi mencapai kejayaan'.¹⁵ Ringkasnya doktrin dilihat sebagai kenderaan yang memandu TD kepada corak latihan, program perolehan peralatan, pengstrukturran dan seterusnya membentuk TD ke arah sebuah angkatan yang relevan untuk masa kini dan masa hadapan. Apabila memperkatakan angkatan yang relevan pada masa kini dan akan datang, maka sebarang perubahan yang dikehendaki perlulah dimulakan dengan melihat dan meramalkan suasana konflik masa hadapan.

TD masa hadapan perlulah berupaya dan bersedia untuk berperang di dalam sebarang keadaan tanpa mengira bentuk mukabumi, tanpa mengharapkan infrastruktur logistik yang tersusun dan tanpa bergantung harap kepada sebarang bentuk bantuan dari negara-negara bersekutu yang dapat jelas dilihat semasa era perang dingin. Peperangan bersama perkhidmatan lain tidak dapat dielakkan malah hubungan elemen laut dan udara perlu lebih diberi perhatian yang konkrit selain operasi maritim dan amfibia. Namun aliran tunai dan faktor persekitaran akan terus menerus menjadi perkara pokok yang akan menjadikan sebarang proses mengekalkan proses kesiapsiagaan tempur yang tinggi. Dalam masa yang sama, adalah

menjadi kepentingan untuk mengimbangi peralatan, organisasi dan struktur TD dengan keupayaan aturgerak, berdaya tahan dan sentiasa bersedia. Keupayaan ini dapat dieksplorasikan dengan mempunyai angkatan yang kecil dengan jumlah platform persenjataan yang sedikit seperti kereta kebal, meriam dan helikopter penggempur yang sedikit bilangannya tetapi dilengkapi dengan keupayaan kuasa tempur bercirikan NCW yang tinggi. Kombinasi angkatan-angkatan yang kecil dengan pengesan dan peralatan menyerang dari jarak jauh dengan tepat ke arah sasaran utama dilengkapi dengan sistem perintah dan kawalan (C4ISR) yang boleh diharapkan merupakan ciri-ciri asas sebuah angkatan NCW. Ciri-ciri asas yang dapat dikenalpasti:

a. **Atur gerak.** Adalah keupayaan untuk mengaturgerak angkatan di medan, melalui pergerakan dan tembakan terus atau di kombinasikan dengan bantuan tembakan untuk mendapatkan kedudukan yang dikehendaki bagi mencapai misi yang diberikan. Fungsi ini termasuklah melaksanakan atur gerak, mobiliti, 'counter mobility' dan mengawal kawasan tanggungjawab. Dari aspek ini, angkatan NCW masih memerlukan tembakan terus di dalam pertempuran jarak dekat. Tembakan terus ini perlulah dapat diadakan pada notis masa yang singkat kepada terup yang berserakan pada jarak yang jauh. Ini merupakan aset penting sesebuah angkatan NCW. Selain daripada itu penggunaan peralatan berteknologi tinggi lainnya yang dapat meningkatkan keupayaan pertahanan kawasan dan 'counter mobility' seperti jerangkap samar atau sebagainya terus dapat ditingkatkan.

b. **Ketepatan.** Adalah sangat penting untuk memusnahkan aset bernilai tinggi dari segi strategik dan taktikal musuh seperti sistem pemerintahan dan kawalannya. Integrasi semua sistem yang ada bagi membolehkan tahap otomasi yang tinggi dan memperolehi ketepatan adalah salah satu daripada ciri-ciri angkatan NCW yang diperlukan bagi mencapai keputusan yang mutlak. Ini mampu menamatkan konflik dengan lebih cepat

¹⁵ Harold Winton, To Change an Army, London, Brassey's, 1988, ms 239.

tanpa melibatkan peningkatan kemalangan. Ini termasuklah penggunaan artileri, mortar, Pyrotechnic Explosive (PE) dan operasi psikologi.

c. **Perlindungan**. Perlindungan disediakan untuk keselamatan dan pengekalan keupayaan sesebuah angkatan supaya ia dapat digunakan pada masa dan tempat yang diperlukan. Ia termasuklah tindakbalas terhadap kuasa tembakan musuh. Bagi sesebuah angkatan NCW perlindungan fizikal secara tradisional ke atas terup daripada tembakan seperti penyamaran dan sebagainya masih terus dikekalkan. Namun perlindungan dari segi sistem dokongan lainnya seperti sistem C4ISR, perlindungan dari serangan peperangan elektronik (PE), tipu helah dan selainnya perlu diberi penekanan yang baru bagi angkatan NCW. Contohnya; penyamaran bukan sahaja dari segi fizikal malah berupaya memberikan perlindungan dari segi elektro-magnetik dan elektro-optikal apabila merujuk kepada keupayaan jaring samaran sebagai contohnya.

d. **Kawalan Spektrum Elektro-magnetik**. Spektrum elektromagnetik adalah nadi kepada penyaluran informasi bagi sesebuah angkatan NCW. Tanpanya, angkatan NCW tidak mampu dapat direalisasikan. Oleh itu, perkara ini perlu diberi perhatian yang utama malah fokus bagi sesebuah angkatan NCW sewajarnya lebih meluas, dari spektrum komunikasi sehingga radar pertahanan udara atau mungkin sehingga jalur frekuensi komersil. Ini termasuklah keupayaan untuk menyerang balas dan melaksanakan tipu helah secara peperangan elektronik selain dibekalkan dengan jalur lebar yang lebih luas untuk menyokong penghantaran data yang besar dengan kelajuan tinggi. Angkatan NCW juga perlulah berupaya melaksanakan operasi-operasi PE dengan efektif bagi memberikan kawalan sepenuhnya terhadap spektrum elektro-magnetik ini.

e. **Perintah dan Kawalan**. Fungsi perintah dan kawalan dilaksanakan melalui pengurusan anggota, peralatan, fasilitas dan prosedur yang diatur oleh seseorang

pemerintah bagi mencapai misi. Ini termasuklah keupayaan untuk memperolehi informasi berhubung situasi, mengenalpasti tindakan yang diperlukan, melaksanakan perintah dan kawalan dan mengagihkan informasi tersebut kepada pihak yang memerlukan. Sesebuah angkatan NCW perlulah berupaya mencapai tahap otomasi yang tinggi melalui pendigitalan medan tempur bagi menyokong proses ini. Keadaan ini sebenarnya memerlukan staf yang terlatih dan pos pemerintah yang lebih kecil agar dapat diaturgerak dengan lebih cepat pada sebilang masa. Selain daripada itu, TD juga memerlukan sistem komunikasi yang dapat bertahan dalam suasana serangan PE yang hebat, tahap saling beroperasi yang tinggi serta fleksibel sama ada ketika beroperasi bersendirian atau secara bersama. Selain itu ianya berkeupayaan untuk menyediakan informasi seboleh-bolehnya secara 'real time' dan prosedur penyaluran informasi yang efisien serta dapat membantu seseorang pemerintah merancang dan bertindak secepat mungkin.

f. **Informasi dan Perisikan**. Informasi adalah bahan yang sangat bernilai yang digunakan untuk memperolehi aspek perisikan. Manakala perisikan pula adalah hasil daripada usaha yang terurus seseorang pemerintah di dalam mendapatkan, menganalisa dan mengagihkan informasi berhubung musuh dan suasana operasi. Keupayaan penguasaan informasi dan perisikan merupakan intipati kepada sesebuah angkatan NCW. Penguasaan informasi ini dapat dilaksanakan melalui pengumpulan, pemprosesan dan keupayaan penganalisaan secara otomasi dari pelbagai sumber yang berteknologi tinggi. Walau bagaimanapun, elemen kemanusiaan seperti membuat pertimbangan dan inisiatif untuk bertindak dengan bijak tetap kekal berpandukan misi pemerintahan atau operasi. Penggunaan pengesan dengan jarak teknikal yang sewajarnya diperlukan bagi menyokong atau membantu proses membuat keputusan seseorang komander selain berkongsi tahap kesiagaan secara bersama.

f. Pengaturgerakan dan Dayatahan. Pengaturgerakan adalah keupayaan untuk menjana, melatih dan seterusnya mengaturgerakkan angkatan yang dikehendaki bagi sesuatu misi manakala dayatahan pula adalah berhubung dengan keupayaan sesebuah angkatan itu mengekalkan kuasa tempur pada jangkamasa yang diperlukan untuk mencapai objektif termasuk penyediaan infrastruktur dan sokongan lainnya. Ia juga berhubung dengan pengekalan moral anggota. Latihan berterusan untuk membangunkan dan mengekalkan kemahiran yang diperlukan dari aspek ini amatlah dituntut di dalam mengatakan ciri ini. Penggunaan simulasi dan sistem sokongan untuk latihan bagi meningkatkan kemahiran berkemampuan menyediakan raptai dari segi mental dan fizikal bagi mempertingkatkan kemahiran bagi sesuatu misi. Selain daripada itu, sistem sokongan mestilah sepadan di dalam kapasiti, mobiliti dan perlindungan di dalam atur gerak yang dirancangkan. Ia seharusnya berupaya untuk mensimulasi setiap aspek pertempuran, bantuan logistik dan kemungkinan-kemungkinan lainnya bagi meneruskan dayatahan terup di medan. Teknologi-teknologi terkini berhubung perkara ini perlu dimanfaatkan sewajarnya.

IMPLIKASI DARI KEMUNCULAN KONSEP NCW

Sekurang-kurangnya tiga implikasi utama dapat dikenalpasti dari kemunculan konsep NCW ini:

a. Doktrin. Revolusi di dalam NCW dan C4ISR ini didominasikan oleh kepesatan pembangunan teknologi. Perubahan ini agak sukar dituruti dan kerana itu implikasinya tidak dapat dilihat dengan jelas dalam masa yang singkat. Apa yang jelas dari konteks ini adalah setiap individu dan organisasi TD perlu peka dan berinisiatif untuk berdaya saing dengan kepesatan teknologi NCW. Oleh itu, perubahan teknologi ini akan memerlukan perubahan doktrin sejajar dengan pelaksanaan sesuatu operasi selain berkait rapat dengan perubahan dari sudut pengambilan anggota, latihan dan

pengurusan sumber manusia agar tuntutan konsep NCW ini dapat direalisasikan.

b. Reformasi Dalam Aspek Perolehan. AS memberikan komitmen yang tinggi di dalam aspek proses perolehan peralatan bagi pembangunan NCW secara menyeluruh. Malah pihak ketenteraan AS memberikan pelaburan yang sangat besar untuk merealisasikan konsep NCW ini. Sebuah syarikat industri di AS, mengganggarkan pasaran bagi meningkatkan keupayaan NCW, sistem pengumpulan informasi dan komunikasi ketenteraan di AS dianggarkan akan menjana US\$200 bilion pada sepuluh tahun akan datang. Pendekatan berhubung perolehan yang berpandukan ‘keupayaan’ daripada berpandukan ‘ancaman’ merupakan pendekatan yang terbaik yang boleh diamalkan. Dari aspek perolehan peralatan, TD sebenarnya bukan bermula dari kosong. Proses perolehan peralatan sentiasa dibangunkan dengan berdasarkan perkembangan teknologi, keupayaan tempur dan keupayaan peruntukan aliran kewangan. Penubuhan ‘Tim Projek Bistari’¹⁶ di dalam merekabentuk struktur keupayaan TD sehingga tahun 2020 merupakan asas terbaik bagi memfokuskan keputusan dalam aspek perolehan peralatan yang berkonseptan NCW. Ini merupakan permulaan terbaik sebelum proses seterusnya dapat dilaksanakan dengan lebih jauh. Sesungguhnya ini amatlah diperlukan dari dahulu supaya proses perolehan dapat disemak, seimbang, lebih terurus, terarah dan lebih fokus untuk masa akan datang.

c. Sistem Arkitektur. Terdapat kata-kata berhubung ‘sistem di dalam sistem’ atau ‘rangkaian di dalam rangkaian’ apabila membincangkan konsep NCW. Teknologi baru yang dibawa bersama konsep ini adalah lebih kompleks daripada apa yang terdapat di dalam TD pada ketika ini. Cabaran utama adalah untuk melaksanakan kajian menyeluruh ke atas semua sistem lama (*legacy*) yang terdapat pada masa kini

¹⁶ Rujuk BTDM Siri 134, Keluaran Jan 2005 ms 6 – 9. Tim Projek Bistari ditubuhkan untuk merumus dan merancang keupayaan TD masa kini dan akan datang berdasarkan jangkamasa 2-10+10 tahun bermula 2004 sehingga 2020.

dan mencari jalan penyelesaian terbaik bagaimana sistem-sistem ini dapat diinteraksikan dan saling beroperasi di antara satu sama lain dengan mengambil kira faktor protokol, perisian, standard dan sebagainya. Dengan penubuhan Markas Angkatan Bersama (MAB), TD akan beroperasi dengan perkhidmatan-perkhidmatan lain secara bersama. Dari sudut teknologi dan konsep NCW, cabaran sistem arkitektur akan menjadi lebih kompleks terutama dari aspek sistem komunikasi.

PENUTUP

Adalah penting untuk terus memandang ke hadapan dan bukan ke belakang. Hanya dengan bertindakbalas terhadap keperluan akan meletakkan TD sebagai angkatan yang relevan untuk masa hadapan. Sejarah merupakan satu-satunya sumber yang terdapat pada masa kini untuk sama-sama dianalisis, bagaimana tindakbalas terhadap keperluan ini penting. Untuk negara yang kurang bernasib baik tidak dapat bertindakbalas terhadap keperluan masa hadapan akan melihat kehancuran negaranya apabila terjebak di dalam konflik yang tidak diingini. Tidak dinafikan pengstruktur dan permodenan TD yang sedang berlaku pada ketika ini sememangnya bertujuan atau dengan berwawasankan ‘meningkatkan keupayaan’. Namun seperti wawasan-wawasan lain, ianya dicelarukan dengan ketidaktentuan masa hadapan. Pembangunan yang direncanakan oleh TD melalui Army 2 10 Plus 10 mungkin akan berakhir pada tahun 2020. Iktibar yang perlu diambil sebenarnya adalah melalui kualiti yang dibina dalam jangkamasa tersebut. Ini bakal membuktikan keupayaan TD di dalam menangani suasana konflik semasa. Namun, yang pentingnya TD perlu memulakannya daripada sekarang. Pelan induk yang komprehensif seperti JV2010 atau *Force Army* perlu dijadikan rujukan untuk pengstruktur dan pembangunan TD dalam merealisasikan hasrat kearah konsep NCW.

Mungkin pelan induk ini adalah bagi memenuhi keperluan tentera AS, TD memerlukan pelan induk sebegini agar setiap perolehan sistem persenjataan, rancangan pengstruktur organisasi, pembangunan sumber manusia dan sebagainya lebih terancang serta yang pentingnya terarah dengan matlamat yang tepat dan pasti.

Kegagalan kebanyakan TD di dunia ini untuk berubah adalah mungkin disebabkan oleh sifat dan faktor konservatif di dalam TD yang kaya dengan tradisi ketenteraan. Ini merupakan halangan utama kepada perubahan. Teknologi baru dan proses-prosesnya boleh menakutkan mereka yang telah selesa dengan kaedah, cara dan teknologi yang telah dimiliki. Namun keselamatan dan kedaulatan negara adalah sesuatu yang tidak boleh diperjudikan dan transformasi kearah konsep NCW tidak boleh dipandang remeh. Ini merupakan cabaran besar dan utama di dalam menghadapi perperangan masa hadapan. Perubahan ini memerlukan pendekatan yang kompleks tetapi perlu diuruskan dengan lebih bijak bagi membolehkan TD bukan sahaja relevan dengan peranan dan tanggungjawabnya kepada negara tetapi ia akan mampu terus bertahan dalam setiap situasi yang dinamik. Seperti yang dinyatakan oleh Sir Michael Howard yang bermaksud:

“...tentera tidak sepatutnya melihat dirinya seperti yang selalu dilihatnya; sebagai seorang tua yang mempertahankan nilai-nilai ketamadunan lama daripada ancaman revolusi baru....sebaliknya mereka harus melihat diri mereka sebagai seorang peluncur air yang bijak serta sentiasa mengesan arus untuk terus bertahan di permukaan. Sekiranya kemahiran mereka dapat dikekalikan, mereka akan lebih lama bertahan di permukaannya...”¹⁷

Ringkasnya, adalah jelas iaitu konsep NCW akan memberikan impak yang besar kepada TD. Ianya memerlukan perubahan dalam setiap aspek pemikiran ketenteraan sekurang-kurangnya pada peringkat permulaannya kepada setiap peringkat pegawai TD.

¹⁷ Howard Michael, Military Science in an Age of Peace, Journal of the Royal United Service Institution, vol. 119 no. 1 (March 1974) , Ms 3.

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Mej Mohamad Rudi bin Othman adalah seorang bekas Putera MTD yang telah mengikuti latihan Pegawai Kadet TJT 28 dan ditauliahkan ke dalam Kor Rejimen Semboyan Diraja pada 29 Jul 89. Beliau pernah memegang berbagai jawatan sama ada di dalam dan di luar pasukan RSD disepanjang perkhidmatannya. Beliau juga merupakan lulusan Maktab Turus Angkatan Tentera, Haigate dan pada masa kini berkhidmat sebagai Ketua Skn di 72 Skuadron Semboyan Diraja.

CHRONICLES OF AIRBORNE FORCES

Oleh Mej Mohd Fadzuri bin Masudoki

Synopsis

Supreme fitness was required to build up the body and mind in order to create total self-confidence and to overcome the initial fear of leaping into the unknown. Stamina was needed to carry the tortuously heavy loads of equipment and ammunition into battle. Above all, parachutists needed the spirit of the warrior and to be imbued with the will to overcome the opposition even when faced with vastly superior odds, and the endurance to carry on and continue to fight to the bitter end when that was necessary. It is the mixture of these qualities and skills, together with the parachuting, which create a thinking soldier who, in the process, form a close bond with his comrades. He knows the capabilities of the men around him, they know and respect him. He is physically and mentally robust, and is thus able to handle stress in all of its forms. He believes that nothing can stop him, his morale is high, he is self-disciplined and totally motivated to win. Such is the airborne soldier. This article intents to provide brief history on how airborne forces come into being.

INTRODUCTION

Airborne forces comprise specialist troops landed by parachute, gliders or helicopter. Their development involved three major issues. First, were the Special Forces, best suited for coups de main and the like, or a major arm in their own right? Secondly, what balance should be struck between parachute delivery, which might leave men scattered over a wide area, or glider landing, where men arrived in small groups but were vulnerable as they did so? Finally, how should they compensate for the fact that they usually lacked firepower and heavy equipment, and were hard to support logistically?

The first unit of airborne troops was established during the 1920s by Italy which formed a company of parachutists. By the end of that decade the USSR had formed and trained a battalion of paratroops and during the early 1930s conducted a number of exercises culminating in 1934 in a drop of a complete regiment of 1,500 men. France followed in 1938 with the formation of two companies of Infanterie de l'Air.



EVOLUTION OF AIRBORNE FORCE

Over the past several centuries, airborne have gazed into the future. In 1784, Benjamin Franklin theorized: "Where is the prince who can afford to cover his country with troops for its defense, as that ten thousand men descending from the clouds, might not, in many places, do an infinite deal of mischief before a force could be brought together to repel them?". Others put their dreams into reality. As early as 1785, men were experimenting with parachutes of one sort or another. That year, Jean Pierre Blanchard, a balloonist, dropped his dog from balloon with an improvised parachute. The drop was successful, but the dumb-founded dog landed and ran away. In 1837, Robert Cocking jumped from a balloon with what was a huge umbrella. Unfortunately, on descent, after the umbrella opened properly, its ribs became entangled, and Cocking experienced what was probably the first fatal parachute "streamer". On 30th January 1887, Tom Baldwin made a leap from a balloon over Golden Gate Park in San Francisco. He and his brother Sam both high-wire walkers, had developed a parachute that deployed from a container. Tom jumped from 5,000 feet. In five second his chute opened, and he landed safely before a gawking and amazed crowd in the park.

With the development of the airplane and the increase in deaths from plane crashes, it became clear that a parachute was necessary to save the lives of pilots in mal-functioning planes. Leo Stevens, who jumped a number of times from a balloon, developed a parachute that could be packed and stored on the bottom of a plane. On 12 March 1912, at Jefferson Barracks, Missouri, he successfully demonstrated his parachute with a drop from a moving plane at 1,000 feet. It was the first parachute jump from a moving airplane.

In World War I, Germany was the only nation to provide its aircraft pilots with parachutes. They were static-line activated chutes. In one air to air fighter plane fight, Capt. Eddie Rickenbacker, the ace of aces in the U.S Air Service, shot down a German Fokker. In his book, Fighting the Flying Circus, he wrote:

"It was an easy shot I could not have missed. I was agreeably surprised, however, to see that my first burst had set to the Hun's fuel tank

and that the machine was doomed. I was almost equally gratified the next second to see the German pilot level off his blazing machine and with a sudden leap overboard into space let the Fokker slide safely away without him. Attached to his back and sides was a rope which immediately pulled a dainty parachute from the bottom of his seat. The umbrella opened within a fifty foot drop and lowered him gradually to earth within his own lines..... Not unmixed with my relief in witnessing his safe jump was the wonder as to why the Huns had all these human contrivances and why our own country could not at least copy them to save America lives."

In the fall of 1918, Col. William P. "Billy" Mitchell was the chief of all the AEF air units and was the air component adviser to Gen. John J. "Black Jack" Pershing, the commander of all US forces in Europe in World War I. Mitchell was an outspoken, flamboyant, self-confident thirty-nine-year-old aviator who tried unsuccessfully to have developed a parachute for his pilots. Even though frustrated, his energy and farsightedness did not stop there. He is probably the originator of the concept of vertical mass envelopment. In his Memoirs of World War I, he wrote of a meeting he had had with General Pershing on 17 October 1918:

"I also proposed to him that in the spring of 1919, when I would have a great force of bombardment airplanes, he should assign one of the infantry divisions permanently to the Air Service, preferably the 1st Division; that we should arm the men with a great number of machine guns and train to go over the front in our large airplanes, which would carry ten or fifteen of these soldiers. We could equip each man with a parachute, so that when we desired to make a rear attack on the enemy, we could carry these men over the lines and drop them off in parachutes behind the German position."

General Pershing approved the concept for Mitchell to begin planning. Mitchell happily told one of his staff officers, Maj. Lewis H. Brereton, Pershing's decision. Well, the war was over before Mitchell had a chance to pursue his radical idea. But it was not lost in Brereton. In World War II, he would command an Allied airborne army. Between the wars, the Russians grasped the "airborne"

concept and decided to do something about it. In the United States in the early twenties, Leslie L. "Sky High" Irvin had developed a rip-cord, "free-fall" parachute and had jumped it successfully before circus crowds many times. In 1931, the Russians bought several thousand of the free-fall parachute developed by Irvin and organized a parachute test outfit. In 1933, forty-six Russian paratroopers dropped from two bombers and established a record for mass jumps. The event went so far as to drop a small tank with a huge parachute. By 1935, the Russians had formed battalion-sized parachute units and done mass jump. Other European nations followed the success of Russia in developing parachute units. In 1935, the French established a jump school at Avignon, and in 1937, formed their first parachute units, the 601st and 602nd Air Infantry Groups. And in 1937, the Germans opened their jump school at Stendal near Berlin. In 1938, the Italians opened their jump school in Libya.

THE SUCCESS AND FAILURE

"Strategy is the application of sound human sense to the conduct of war; its teachings go little beyond the first requirement of common sense. Its value lies entirely in concrete application. The main point is correctly to estimate the situation and then to do the simplest and most natural thing with firmness and caution. Thus, war becomes an art—an art, of course which is served by many sciences. In war, as in art, we find no universal forms; in neither can a rule take the place of talent"

Von Moltke.



It was the German who saw the opportunities offered by airborne units operating in conjunction with armored formations. In 1938 7th Flieger Division, commanded by Maj Gen Kurt Student, was formed by the Luftwaffe, comprising parachute and air-landing units with their own integrated air assets which included a number of gliders. Elements saw action for the first time in May 1940 during the invasion of the Low Countries, featuring an attack on the fortress at Eben Emael when parachute engineers landed by glider on the top of the casemated fortress. In May 20th 1941, 7th Flieger Division, by then part of XI Air Corps, was subsequently used in the invasion of Crete which was the first battle won by airborne troops alone. Although the German captured the island, however, together with XI Corps' Assault Regiment, it suffered a catastrophic loss. Of the some 13,000 paratroopers who jumped on the island, 5,140 were killed or wounded, and 350 troop transport planes were destroyed and Hitler decreed that German airborne forces were thereafter to be used solely on the ground role.

The Allies followed the Germans' lead. In October 1941, Britain formed the 1st Airborne Division and in May 1943 the 6th Airborne Division, each comprising two parachute brigades, a glider borne air-landing brigade, and divisional troops. Air transport was provided by the RAF which converted bombers for dropping parachutists; from the latter part of 1944 onwards these were replaced by Dakota (Douglas C-47) transports. Air-landing units and the majority of divisional troops traveled in Horsa and Hamilcar gliders crewed by members of The Glider Pilot Regiment and towed by RAF bombers. The American formed five airborne divisions; 11th, 13th, 17th, 82nd, and 101st. Larger than their British counter-parts, each comprised three parachute and one glider infantry regiments (each of three battalions) with supporting arms. Parachutists were carried in C-47 Dakotas which were also used as tugs for the Waco and Horsa gliders of the glider-borne units. British airborne forces first saw action when 1st Parachute Brigade, part of 1st Airborne Division, was deployed to North Africa during the period 1942 to 1943. Subsequently the complete division commanded by Maj Gen F. 'Hoppy' Hopkinson, took part in operations in Sicily and Italy during 1943. Airborne units were also used in two coup de main operations in 1942. In February, a company of 2nd Parachute Battalion

was dropped at Bruneval, on the French coast, in a successful operation to capture a new type of German radar. In November, a force of sappers from 1st Airborne Division was flown in two gliders to Norway in a unsuccessful attempt to sabotage a factory producing heavy water for the German atomic weapon development programme. In November 1943, 2nd Independent Parachute Brigade Group under Brig C.H.V. Pritchard was deployed to Italy and was subsequently employed on operations in southern France, as part of 1st Airborne Task Force, and Greece during the following two years. In June 1944 6th Airborne Division, commanded by Maj Gen Richard Gale, took part in the invasion of Normandy, long with the 82nd 'All American' and 101st 'Screaming Eagles' US Airborne Division under Maj Gen Matthew Ridgway and Maxwell Taylor respectively. The division remained on operations in France until withdrawn three months later.

In September 1944 Lt Gen 'Boy' Browning's I Airborne Corps, part of First Allied Airborne Army under Lt Gen Louis Brereton, was deployed on MARKET GARDEN. It comprised 1st Airborne Division under Maj Gen Roy Urquhart, 82nd and 101st US Airborne commanded respectively by Brig Gen James Gavin and Maj Gen Maxwell Taylor, and 52nd Lowland Division. The two American divisions achieved their objectives but 1st Airborne Division, dropped and landed too far from its objectives, was decimated in the ensuing battle of Arnhem and Oosterbeek against elements of two SS panzer divisions. In late March 1945 the XVIII US Airborne Corps under Ridgway, comprising 6th Airborne Division under Maj Gen Eric Bols and 17th US Airborne Division commanded by Maj Gen William 'Bud' Miley, took part in VARSITY, the highly successful crossing of the Rhine. Avoiding the mistake made at Arnhem, both divisions were dropped and landed directly on to their objectives which were taken by the end of the first day after hard fighting.

The Indian Army had in 1941 formed 50th Indian Parachute Brigade which subsequently saw extensive action in the infantry role in the Burma campaign. In 1944, 44th Indian Airborne Division (later re-designated 2nd Indian Airborne Division) was formed under Maj Gen Eric Down, comprising two parachute brigades and an air-landing brigade. Only one airborne operation was carried out, a composite battalion group being dropped at Elephant Point in May 1945. Airborne operations

in Burma otherwise consisted of landing behind Japanese lines in 1944 by Chindits of Maj Gen Orde Wingate's Special Force which comprised 14th Long Range Penetration Brigade; 16th, 23rd, 77th, and 111th Infantry Brigades and 3rd West African Brigade. Pathfinders and airstrip construction team of a USAAF airborne engineer squadron were landed in gliders of the USSAF's No. 1 Air Commando. Troops were subsequently landed by RAF and USAAF C-47 transports, with fire support and casualty evacuation being provided by P-51 fighters and L-5 light aircraft of No. 1 Air Commando.

The principal American airborne formation deployed in the Pacific theatre was the 11th Airborne Division, commanded by Maj Gen Joe Swing. At the beginning of February 1945, two battalions dropped at Tagaytay Ridge and later that month the 503rd Parachute Infantry Regiment dropped on to the Japanese-held fortress on Corregidor, and island off Manila Bay in the Philippines. Six days later, the 1st Battalion 511th Parachute Infantry Regiment dropped Northeast of Tagaytay Ridge, 20 miles (32 km) behind Japanese lines, to release POWs from a Japanese prison camp. In June, elements of 11th Airborne Division carried out an air-landing operation to intercept the Japanese withdrawal from Luzon.

The Italian, having led the way at the outset, expanded their airborne forces to two under-strength parachute divisions but never used them in the airborne role, though they fought with distinction on the ground. Similarly the Soviets increased their airborne forces but made little use of them, carrying out a small number of brigade-sized parachute operations in 1943 and 1944. The Japanese also made little use of their airborne forces during their invasion of South-East Asia. Two successful operations, at Menado and Palembang in the Dutch East Indies, were carried out in 1942 but thereafter no further use was made of airborne units until December 1944 when two parachute regiments took part with limited success in an attack on three American airfields in the area of Burauen in the Philippines.

AIRBORNE FORCE - POST SECOND WORLD WAR

The aftermath of World War 2 (WW 2) saw drastic reductions in western airborne forces, Britain eventually reducing hers to two parachute brigades

groups (one a Territorial Army formation) and America retaining only one of its airborne divisions. Five years later elements of the 187th Parachute Infantry Regiment carried out two operations during the Korean War in October 1950 and March 1952. France was the exception, forming the 10th and 25th Airborne Divisions and subsequently using them in the first of the postwar colonial wars in Indochina where they fought heroically at Dien Bien Phu. In 1956, French paratroops of the 2nd Regiment Parachutiste Colonial and 11th Demi Brigade Parachutiste de Choc, together with the British 3rd Battalion. The Parachute Regiment Group, took part in MUSKETEER, the airborne operation conducted during the initial stage of the disastrous invasion of Suez. In 1957, the Soviets revealed they had been developing a complete airborne army comprising six divisions. Indeed, they had surpassed the West in development of equipment designed for airborne operations, including light armored vehicles self-propelled (SP) guns capable of being dropped by parachute.

AIRBORNE FORCE – MODE CHANGES

During the last thirty years, the delivery of large numbers of troops by parachute to their objectives has been made more difficult by a number of factors such as the development of sophisticated air defence systems, which has increased the risk of interception of transport aircraft, and modern battlefield surveillance and target acquisition systems which render dropping zones vulnerable. Furthermore, light scales of equipment and limited organic logistical support inevitably limit the ability of parachute formations to conduct extended operations, particularly against a heavy armored enemy. There has thus been a shift of emphasis in airborne deployment away from the parachute to a method of tactical air transport which overcomes many such problems and offers greater flexibility; the helicopter.

It was the 1950s that helicopters first saw real operational employment. During the Korean War, US forces employed them for liaison, supply, casualty evacuation, and troop transportation. Four years later, French forces used them for deployment of airborne units on counter insurgency operations during the Algerian independence war. Some were armed with missiles and employed successfully in the attack role. The Vietnam War

saw the helicopter come into its own as a method of large scale transportation of troops and equipment. During the early 1960s the 11th Air Assault Division, commanded by Maj Gen Harry Kinnard, was formed as the US Army's first dedicated airmobile formation. Subsequently re-designated 1st Cavalry Division (Air Mobile), it saw extensive service in Vietnam and developed the role to a fine art. Today the 101st Airborne Division (Air Assault) is the US Army major helicopter-borne formation, equipped with its own light, medium and heavy lift transport as well as the attack helicopter assets.



Helicopters were also extensively used during the war in Afghanistan, during the period 1979 to 1989, where the Soviet Army used them on operation against Mujahedin guerillas. Airborne and Air Assault units mounted tactical air assault operations against guerilla held areas, being landed under supporting fire from artillery, multi-launch rocket launchers, and ground-attack aircraft. Heavily armed attack helicopters preceded landings, laying down suppressive fire if necessary.

The parachute does still have a role to play in operations where delivery is beyond the range of helicopters. An example of this occurred in 1978 when the French Foreign Legion's 2^e Régiment Etranger de Parachutistes and the Belgian Regiment Para-Commando were flown from Corsica and Belgium, subsequently being dropped on to an airfield at Kolwezi in Zaire, in an operation to rescue Europeans under threat from rebel forces. Moreover, the use of free-fall parachuting, developed for military use since the 1960s, continues to be a viable method of long-range airborne delivery of small groups for pathfinding and reconnaissance tasks.

AIRBORNE FORCE – LETHALITY

Airborne forces still form part of many armies. The US army features two major regular formations: The 82nd Airborne Division and 101st Airborne Division (Air Assault). France has its 11 Eme Division Parachutiste and 4 Eme Division Aeroportée, both of which form part of its Force d'Action Rapide. Germany's airborne forces currently comprise the Airborne Forces Command, incorporating the 26th and 31st Airborne Brigade which has parachute and airmobile capabilities, while the Italian army has the Folgore Parachute Brigade and a *carabinieri* parachute battalion. Since the collapse of the USSR, Russia's airborne forces currently comprise five airborne divisions, an independent battalion and a spetsnaz regiment.

The year 2000, witnessed 16th Air Assault Brigade as the British Army's newly formed airborne formations, possessing its own attack and light helicopter assets which include three Army Air Corps regiments equipped with the GKN Westland Apache WAH 64 attack helicopter. Light and medium-support helicopters of the RAF were provided as required by the tri service-service Joint Helicopter Command. Two of the three regular army battalion of the Parachute Regiment formed as infantry component, together with an air-landing battalion. These two units retained their parachute capability for long range airborne operations or those requiring the insertion of a leading parachute battalion group.

CHALLENGES

Coming as they do at the air-land interface, airborne forces do not always fit comfortably into structures which have tended to separate air from

land. Germany's WW 2 parachute arm was part of the air force, and it was only with the 1998 Strategic Defence Review that Britain established a unified command structure for its helicopters. The doctrine governing their use is still being developed, and in the West is increasingly linked to manoeuvre warfare. Airborne forces offer the opportunity of creating room for manoeuvre by using the third dimension, achieving 'vertical envelopment', in addition to—or instead of envelopment achieved by ground manoeuvre, and helping shape deep, non-linear, battlefields. The traditional functions of their component arms are likely to become blurred, with a growing emphasis on linking troops who move by air to battle with fire delivered by artillery and aircraft against targets identified or designated from the ground. Their mobility gives them a particular utility in intervention operations, and the qualities engendered in their training supply an important combat edge.

CONCLUSION

The impact of present and future airborne force challenges may affect Malaysian Army Paratroop organization. Thus, it become a prime consideration that future planning for Malaysian Army paratroop need further reshaping in term of organization structure, mode of employment, requirement of advance technology and adoption of helicopter borne concept. Effectiveness of airborne force to be employed in any condition and threat are greatly dependent on its lethality. Airborne force also is part of present operation concept of 'manoeuvre warfare' which can be utilized with greater advantages in term of surprise, deception and being able to act faster than the enemy can respond. Utilisation of helicopter by airborne force is a mean of creating extreme mobility to achieve force mission.

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ELECTRONIC WARFARE DEVELOPMENT

By Brig Jen (B) Dato' M Zaki Wan Mahmood

Synopsis

Military forces are aware of the need for electronic warfare (EW) capabilities, but have not been able to acquire adequately the necessary assets. Normal procurement process will never accord the required capabilities. EW systems are sensitive assets and suppliers are restrained by their governments from supplying the best system. The military has to seek the support of local industry consortium to develop EW capabilities. The government has to identify friendly nations to acquire the know-how for EW development. With the support of the government of the supplier it is hoped there will be maximum support towards local development of EW assets.

Information in this article is derived from experiences of the writer whilst in service with the Royal Signal Regiment and the private sector.

"Make ready for them all you can, forces and horses so you dismay the enemy..."
The Quran 8/60.

"It is a doctrine of war not to assume the enemy will not come but rather to rely on one's own readiness to meet him".
The Art of war by Sun Tzu.

INTRODUCTION

Military forces are familiar with electronic warfare (EW) operations and their effects during peacetime and in wartime. In peacetime EW is applied to obtain intelligence to prepare for war. In wartime military commanders will not go to war without adequate EW support. Military use of radio energy radiated equipment offers opportunities to others to apply their EW operations, for intelligence or to nullify effectiveness of targeted equipment and systems. The advancement of technology causes an increase in usage of electronic equipment, thus in modern battlefield there is an increase in EW threats and a vast potential of EW applications.

What any military force needs is appropriate, adequate and sustainable EW capabilities to support national defence forces for an effective

defence of a nation. If an appropriate portion, say about 10%, of the RM 100 billion spent in the last quarter of a century for defence development was not for EW development, then it can be assured that the defence forces are not ready for the expected roles of national defence.

These EW capabilities are only achievable if appropriate funds are made available, and they are locally developed as well as regularly enhanced. EW capabilities need regular enhancement and advancement as well as secrecy. These three criteria can only be assured through local development. Acquiring effective EW capability requires influence and support from the government on policy regarding procurement. The military provides directions and local industry helps to develop. This paper will identify ways towards acquiring effective EW capability.

EW OPERATIONS

MILITARY ELECTROMAGNETIC SYSTEMS

To be able to envisage the effect of military operations without EW support one needs to review the military use of electromagnetic (EM) systems. The diagram below shows the use of these systems, both in combat and communication zone, encompassing navigation, sensors, command-control and communications as well as weapons guidance. These systems may be on land or mounted on platforms, are affected by enemy EW operations. All the systems and platforms shown in figure 1 emit radio energy. They need protective measures to be effective.

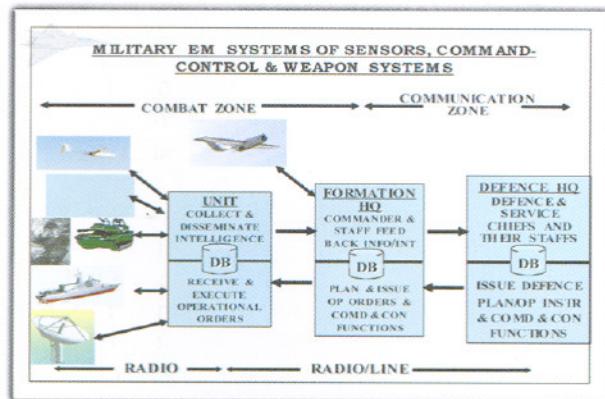


Figure 1. Military Use of EM Systems

FUNCTIONS OF EW

Electromagnetic Spectrum Utilisation. Military forces rely heavily on EM radiated equipment, while opposing forces apply offensive EW capabilities to nullify the effectiveness of the military forces' equipment. The objectives of EW are in the EW definition, which says that; *EW activities are actions involving the use of radio energy to determine, exploit, reduce, prevent or deny the hostile use of the electromagnetic spectrum*. The use of this spectrum by the military is in the communications and radar frequency bands. Each side will endeavor to have control over the use of the spectrum, or to have EW superiority.

Functions of EW may be further elaborated, in a likely order of priority. The order may change to fit into difference scenarios. These mentioned functions can be used to formulate EW operational plans or as guidance to its development programme.

EW operational objectives or development targets are to achieve effective control over a given EM spectrum in an area of interest. The aim is to achieve EW superiority or to nullify effectiveness of opponents' command-control, surveillance and weapon systems. EW functions may be classified into four categories, as discussed below.

Effectiveness of Own System. The highest priority function of EW is to ensure that own defence system is effective and able to provide the necessary early warning as well as to counter intrusions and attacks. These EW protective actions are known as electronic protective measures or counter counter-measures (ECCM), which are best done by own defence forces, supported by local industry. Local development will erase any possible sabotage and other treacherous acts by unscrupulous foreign developers. Without ECCM, enemy's jamming, interference, interception and manipulation will affect communications systems, and our surveillance and weapon systems will be rendered ineffective. Radars will not detect approaching threats and missiles will not hit targets.

Intelligence Gathering. The next priority function of EW operations is intelligence gathering, known as signal intelligence (SIGINT) at strategic level and as electronic support measures (ESM) at tactical levels on board combat platforms. No armed forces will survive any crisis without the support of its SIGINT operations, nor will any combat platform last in battle without ESM. At strategic level, both communications and non-communications intelligence are required. For combat platforms, the priority is non-communications intelligence that is to assess possible threats from enemy surveillance and weapon systems.

To plan any operation one requires accurate intelligence. SIGINT and ESM provide accurate data on enemy radios and other EM energy radiated equipment. SIGINT and ESM actions are to search, intercept, locate, record and analyse enemy radiated EM energy. Counter measures and other EW plans are developed from the data. Normally intelligence-gathering activities will provide commanders and staff with the following intelligence on the enemy:

- Identity of enemy.
- Composition and strength (order of battle/electronic order of battle).

- c. Location and disposition.
- d. Enemy force activities and routines.
- e. Intentions and their battle plans.
- f. State of readiness and preparedness.
- g. Types and coverage of surveillance and reconnaissance systems.
- h. Types and distribution of weapon systems.
- i. Effectiveness of enemy network centric warfare or command and control systems.

Platform Protection. The third activity is a follow-up from the activity of ESM on board platforms. Development of onboard electronic defences for land, sea and air platforms are concurrent with the development of the ESM. Electronic support measures are to forewarn of the impending threats and the electronic defences are to protect the platforms while they are on combat duties. The two measures are a must for any military combat platform; land, sea or air. Without them, platforms are easy preys for enemy missiles.

Disrupt Enemy's Systems. Capability to disrupt enemy's electronic defence systems also

known as electronic counter measures (ECM) or electronic attacks needs to be developed. Activities in this category are either jamming or deception. The aim is to interfere, disrupt or obstruct enemy from effective use of his equipment and systems, whilst having the freedom of use of own equipment. EW superiority will allow one to impede the enemy from doing the same. Commanders may apply EW superiority over their enemy during the following occasions:

- a. **In Defence.** Effects of own offensive EW applications will be disastrous to the enemy. Disruptions of enemy's command and control will create havoc to his forces in operations. Enemy's surveillance efforts will not provide intelligence and early warning, whilst his weapons will be missing targets.
- b. **In attack.** Such application prior to an attack will blind the enemy and own attacking forces will destroy enemy defences at will.
- c. **Electronic Attack.** Given in figure 2 are some options available in battlefields on how EW activities may be applied. From experience lessons learnt indicate that commanders want good protection for his radios and radars, and capabilities to bring havoc onto enemy.



Figure 2. US Mobile EW with Electronic Attack Capability

POSSIBLE EMPLOYMENT OF EW IN WAR ELECTRONIC ATTACK OPTIONS									
Distance Types of target to tgt	First Echelon		2nd Echelon		Rear				
	0-3	3-6	6-9	9-15	15-20	20-30	30-50	50-100	>100
Comd & con	Intercept, locate & jam		Intercept & locate		Intercept	Intercept			
Arty/NGFS	Locate & jam		Locate	Locate	Locate	Locate			
Air def	Locate & jam		Locate	Locate	Locate	Locate			
Int	Intercept loc & jam	Intercept loc & jam	Intercept	Intercept	Intercept	Intercept			
Log	Intercept & locate		Intercept	Intercept	Intercept	Intercept			
Air support	Locate & jam		Locate	Locate	Locate	Locate			
Surveillance radars	Locate & jam	Locate	Locate	Locate	Locate	Locate			

Figure 3. EW Offensive Operation Options

EW Superiority. To achieve EW superiority is the dream of military commanders who understand roles of EW. Having all the capabilities will assist commanders to plan to achieve EW superiority. A commander who has acquired the EW superiority will have the freedom of use of his electronic systems and is capable of restricting his opponents of similar use.

EW EMPLOYMENT AND PROBLEMS

Incapability. The US led forces demonstrated the effect of controlling the EM spectrum, utilizing assets such as those in figure 3, during their attack on Iraq. Militaries must avoid similar disasters as experienced by the Iraqis. Be reminded that, "if you lose the EW battle there is no hope of winning the main battle". All military forces are very much aware of the importance of EW.

They did not use EW in operations because they did not have suitable EW assets. Reasons for their failure to develop the necessary EW capabilities may be summarised below.

a. **Lack Awareness.** The most common failure is lack of awareness, caused by lack of experience. As said by Maj Gen John Corder (USAF), director of air operations for desert storm, "when you don't have anyone shooting at you, your attention is not drawn to EW direction. But as soon as a guy sees the first SAM or his first gun fired, all of a sudden he wants all EW that he can get".

b. **Lack of Fund.** Lack of fund due to lack of awareness, resulting in no fund being

requested for EW development, or other purchases may have been done utilising EW allocations.

c. **Lack Suitable Asset.** EW equipment purchased is unsuitable for the jobs or unable to cope with changing threats. Inappropriate equipment acquired may have been caused by lack of awareness, insufficient fund or inaccurate assessment of threats.

d. **Lack Commitment.** Without strong commitments from commanders and staff at all levels of command will not bring forth accurate EW procurement plan.

e. **Lack Local Support.** There has been an absence of local industry support due to preferences given by the government to foreign contractors.

EW Threats. Military without effective EW assets is handicapped and will face many deficiencies while performing their duties. Some of the problem areas are described below:

a. **Communications.** Messages in radio energy form travel in the EM spectrum, as in figure 4, are exposed to interception, manipulation or jamming. Interception is for intelligence; manipulation is for deceptions and jamming is for disruption.

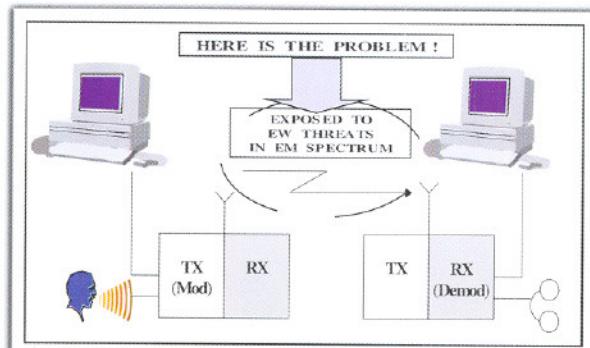


Figure 4. Problems in Radio Communications

b. **Non-communications.** Similar problems exist in the military use of radars. Most surveillance and weapon systems utilize radars. Transmissions of radio energy travel in the EM spectrum are exposed to enemy EW threats, as in figure 5.

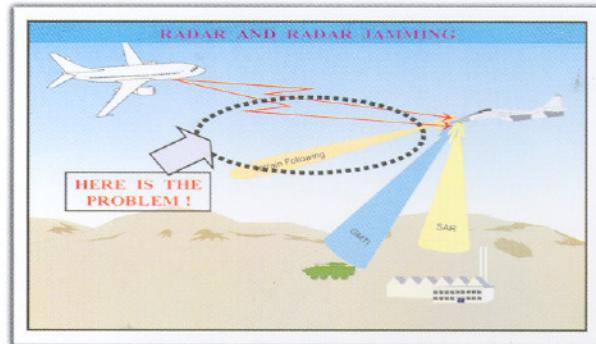


Figure 5. Problems in Radar Applications

BENEFITS OF EW

EW Activities. EW operations are relevant in peace and wartime. During peacetime military efforts are to prepare for war. In support of the preparation for war, EW operations are to collect intelligence so that its force development commensurate with threats, and defence contingency plans are adequately drawn and supported by EW plans. Intelligence is valuable too in preparing diplomatic solutions to be used in negotiations. However during wartime the main EW mission is to acquire EW superiority, so that intelligence collection activities are unhampered, offensive and defensive operations are effectively supported by EW assets and that all efforts to counter enemy EW activities are successful.

EW Database. Intelligence on enemy and information of your own capabilities are key elements in decision-making. EW databases are established to assist commanders in planning for operations. Analysed data from SIGINT and ESM operations are kept in databases, to be used to mount EW operations. Activities of interception, jamming, deception and destruction to be effective require accurate information on enemy equipment. Similarly, own capabilities in ECCM are developed based on information of enemy ESM and ECM activities. Efficient EW database is an important element in EW operations.

Support Civil Authorities. Military COMINT activities may be used to support civil authorities to monitor illegal activities. Terrorists, pirates, gun-runners, armed escorts smugglers and many other illegal activities are using radios, HF, VHF, satellites and mobile phones, during their operations. Their

transmissions may be intercepted, analysed and their positions may be located. Processed information is then conveyed to enforcement agencies.

EW DEVELOPMENT

OWN DEVELOPMENT

Need Local Development Capabilities.

Commanders need the support of EW in peace time and more so in battlefields. All known capabilities are required, and are best met if they are developed locally. Statements mentioned below explain the need for local development.

Not Enough Money. Defence budgets are always limited. From limited allocations there are other priorities of procurement and EW will not be of a high priority. Local development will cost less, though most equipment is purchased from overseas.

Progressive Development. EW systems are developed progressively in phases, based on a master plan. Priority and direction may be set and changed. Having development done locally, allows for flexibility and the existing EW systems may still be incorporated with new systems.

Capabilities Not Exported. Most capabilities of systems depend on software control. Software developed by local industry will have the best capabilities to meet local needs. Overseas supplier will not give the best software capabilities. The full capability software is for its own military only.

Own Peculiarities. Military systems development takes into considerations doctrines, tactics, procedures, roles, responsibilities and threats. They are modified occasionally. Systems from overseas will not meet the latest requirements; overseas contractors will not entertain changes. Those documents are classified and are best not to be released to any overseas parties.

Customisation. Developments may be done by customisation of existing systems and equipment. Capability development is a natural progression from current capabilities based on current systems and

equipment. Customisation may not be acceptable to overseas suppliers selected through a normal tender procurement exercise.

Maintenence. Systems being developed and integrated by local industry will have a longer service life and have shorter unserviceable periods. Maintainability rate of locally grown systems is far better than totally imported systems.

Support During Crisis. There are occasions when military forces will require support from industry, especially during crisis. Local industry that has been involved in system development is assured of providing the necessary support.

Enhancement. Defence systems will require regular enhancements, due to changes in those factors mentioned above. Local company are able to enhance locally developed system.

Information Confidentiality. Strength of defence systems is in their ability to provide surprise to the enemy. Local industry involved in system development will assist the military to maintain information confidentiality.

IW Threats. System from overseas is not guaranteed that it will function in time of war. It has happened where embedded chips left by foreign developer were activated in wartime.

Joint Developments. EW systems development must be done jointly by the military and the local industry. Neither is capable of doing on its own. The user knows what is required, for what occasion and against what threat. The industry knows the technology and how to produce what the user requires. Methods for joint development are discussed below.

Smart Partnership. It is best for two parties to enter into a collaboration of smart partnership, where both parties will contribute intelligently and diligently. With one objective, to satisfy needs of national defence, collaboration and cooperation from both parties must be beyond the normal atmosphere of customer and supplier relationship.

Awareness. The programme will start with an awareness programme for both parties. Project

teams will be exposed to military requirements, policy, operations, tactics, procedures, threats, present capabilities, project objective, information security and future scope.

Management. Project management will be done jointly, headed by the military and the team will be answerable to a military steering committee. Representatives from the industry will sit on the steering committee, which will meet at regular intervals, or as necessary.

Specification. Both parties will draw up requirements and specifications jointly. They are to be approved by the steering committee. Technology will match military requirements.

System Design and Development. The joint development team will do system design based on the specification and seek approval from the steering committee before development starts.

Equipment Procurement. Most equipment is purchased from overseas, by tender, with industry advice. Equipment must meet the criteria for local system development.

Software. Software development is one that the local industry can do. Development of software for EW system and for databases is best done jointly by the industry and the military.

Customisation. In all defence system development, to avoid waste, existing systems and equipment must be considered for customisation and be integrated with new systems.

Installation, Integration and Commission. These three activities are done together by the military and the local industry. Having only security-vetted locals working in bases, camps and on board platforms will safeguard security of information on systems and deployment.

Maintenance, Enhancement and Upgrade. All defence systems require the three activities. Information on EW systems is sensitive and is classified in nature. The three activities are to be done only by the local industry staff and the military personnel.

Support Operations. In some cases the military may need support from local industry in performing operational tasks; e.g. when facing new unknown threats or when qualified staff is not available. The industry may have the technological answers or the necessary qualified staff.

CRITERIA FOR SUCCESS

Commitment. The most important criterion for success is commitment from every relevant sector of decision-making. EW is the most sensitive element of defence systems and that its development has to be securely protected and its information safe guarded. All involved must be aware of the urgency of the project and give undivided sincere commitment to ensure EW development is a success. The project will then get its necessary budget, personnel, and the level of secrecy and close supervision it should have.

Industrial Capabilities. EW development project will fail if the local industry is not fully prepared to undertake the job and be responsible to ensure its success. The EW scope is vast; no one company will be able to handle on its own. In addition to technological know-how, other capabilities required of the local industry are:

- a. **Consortium.** It will have to be a consortium of local companies; each with specific specialisations, with one as the prime contractor.
- b. **EW Functions and Needs.** The consortium has to understand the EW activities and know its specific functions as a partner to the military.
- c. **Policies, Doctrines, Concepts, Tactics and Procedures.** The consortium must be in a position to fully comprehend and apply knowledge from these documents to technological implementations.
- d. **System Management and Integration.** Experiences and expertise in system management and integration must be with the industry. Some guidance and technology transfer from overseas original equipment manufacturer may be necessary.
- e. **R & D, Maintenance, Enhancement.** All the local companies involved will need to have

a respectable level of R & D facilities to support the EW development activities. They will mutually agree on the scope or area for each to concentrate.

- f. **Planning and Programming.** The participating local industry staff members must have abilities and experiences in project planning and programming.

EW Technology. The next most important criteria for success are possessing capability, knowledge, enthusiasm and cooperation. Listed below are some topics of technological subjects for local industry to acquire capability and knowledge in.

- a. **Communications and Radar.** The industry needs to understand technological aspects of radio and radar as well as their roles, applications, related platforms, security requirements, military deployments and threats against them.
- b. **Simulation.** Simulation in EW environment is used during development to tests for effectiveness of jamming, surveillance or coverage of radios and radars.
- c. **Scenarios.** Knowledge on military crisis scenarios and technology involved to assist developers in understanding EW applications.
- d. **Platforms.** Most of EW systems are mounted on ground, naval or air platforms. Familiarisation with these platforms is necessary to enable developers to successfully integrate systems onto the platforms.

Commitment for Self Reliance. If the nation is committed to implement its defence policy of self-reliance, resources have to be made available to implement EW development programme. The government allocation of resources will be followed by selection of local industry that has the commitment and resources to support the programme. The government has to supply finance and some manpower, whereas the industry has to provide manpower and know-how. Development facilities and research laboratories are from the industry.

Sincere Overseas Partners. The other most important criterion for success is to have reliable overseas partners that have their governments' full support. It is likely that more than one foreign supplier, from more than one country, will be involved. It is best and easy to coordinate if one foreign company can be found to satisfy the total EW needs of the military. The foreign governments' relevant agencies must be active to monitor and influence the programme. The overseas partners must have the experience and be sincere in its support.

Assistance from Government of Overseas Partner. Overseas partners and the sincerity of their governments are invaluable towards the success of EW development. These governments will approve unlimited capability and technology transfer. Similarly, equipment capabilities, normally controlled by software, for export version will have software capability of 10 to 50%. Friendly nations will approve much higher than 50%. These foreign governments will give training packages similar to those given to their own personnel.

CONCEPT OF IMPLEMENTATION

Education for User and Industry. The subject of EW is not widely understood, especially by the industry. In the military some staff may not comprehend the subject fully, or may differ in the understanding. What is obvious is that both parties have different levels of knowledge in the subject. The military and the local industry staff involved in the development programme will need to be educated in the subject. Both parties need to be knowledgeable in technical and operational aspects of the subject. Intensive courses for all involved are to be held. Instructors will be from both the military and the industry.

Procurement Not By Open Tender. EW systems are strategic defence assets. Their capabilities, deployment and involved platforms are of interest to opponents. Procurement and development of these capabilities by military forces are never done by open tenders. This is to restrict information on intentions and specifications from being made public. Some guidelines on how to proceed with EW development are listed below.

Classified Information. Information on EW assets is highly classified. Military forces of neighbouring nations and major powers are interested to know of a nation's capabilities, effectiveness, deployment, platform fittings, maintenance, enhancement, future development and suppliers. Utmost care must be taken during procurement or development so as not to allow information to leak out. EW information is useful to the foreign militaries to plan and develop the necessary countermeasures. In addition to our EW capabilities they are also interested in our weapon systems, radars and radios, so that they can develop the corresponding monitoring and jamming capabilities.

Tender by Invitation. The manufacturers are scrutinised and only qualified manufacturers are invited for discussion. Some of the criteria for manufacturer selections are; overall product quality and capability, completeness in hardware and software, willingness to transfer technology, long-term support, business ethics, system cost, maintenance cost as well as foreign government support.

Local Industry Nominated. The government is to select local companies to form the local industry consortium to be partners to the military. The companies must be equipped with the necessary expertise and experiences. The criteria for selection of these companies are as discussed earlier. These companies must be able to maintain secrecy of the programme, by having their personnel security vetted and their premises secured.

Joint Activities. A close cooperation between the military and the local industry must be established. Both must function as an entity. Any misinterpretation and misunderstanding at the project team level is referred to the military steering committee, where the industry is also represented. Listed below are some of the activities that are likely to be participated jointly:

- a. Training and transfer of technology.
- b. Management and planning.
- c. System design and development.

- d. Database development and customisation.
- e. System testing, integration and installation.

Maintenance of Existing Systems. The existing EW systems are still being used and will still be in service for many more years. There is just insufficient money to replace all the old systems. They can be made effective by proper maintenance and enhancements so that they are able to match the latest threats. Enhancements are to be made so that the old systems complement the new systems. The EW capabilities will increase if the old systems are retained and new systems are added into service. Local industry and the overseas partners have their roles to play, while the military must have a firm direction and obtain the budget.

Strategic and Tactical EW. The EW facilities to be developed will constitute strategic and tactical systems that will fit into the needs of the armed forces and the three services. Coordination for the development will have to be done by the armed forces headquarters to satisfy the requirements of different organisations and to fit into different applications. EW resources are developed to meet certain threats and targets. These threats and targets may change, due to technological advancement and changing scenarios. As such EW programmes too must change.

Funding and Procurement Policy. The military needs the support of the government, in particular the necessary funding to achieve any success in defence development. The EW programme must be the top priority for local development. The normal defence procurement procedure by open international tenders has to be done away with. The staff dealing with the defence procurement will have to understand the importance of local development for EW capabilities and that EW systems are not to be purchased through tender.

Support from Foreign Companies. Foreign EW suppliers play important functions in ensuring the success of the programme. They will be involved in separate EW development projects, either strategic or tactical systems, as well as, either for army, navy or air force applications. The foreign partners will be involved early in the programme, to start project planning, technology transfer and establishing development capabilities.

CONCLUSION

Effective EW capabilities are a must for military forces, to ensure military forces are able to perform their roles and responsibilities and to survive during conflicts. EW capabilities are therefore for the survival and well being of the nation and its people. Effective EW can only be acquired through local development. Failure to develop such capabilities will put own military forces at a disadvantageous position in the face of enemy. For those who are responsible for the failure can be construed as having betrayed own national security.

One may argue that it is expensive to develop EW capabilities locally. On the contrary, it is less expensive in the long term. These capabilities are cheaper, yet more effective than sophisticated platforms that have been purchased. Such platforms are ineffective without the necessary EW support. To develop adequate EW assets, sufficient funds must be made available. Inadequate allocation of budget results in less capable EW assets and this is not acceptable. Ineffective EW capabilities are as good as no EW assets at all. Having military forces equipped with expensive platforms, but with no EW support, is as good as not having them. These platforms are only good for parades such as the National day celebrations.

Information on EW capabilities and deployments is too sensitive and is given a high degree of classification. Their development, integration, maintenance and enhancements are to be undertaken by the military itself, supported by reliable local industry. Locally developed systems enhance secrecy, reliability and service life. These EW facilities require continuous enhancement and maintenance to sustain effectiveness. Existing systems require regular enhancements to continue to function and complement recent assets.

Nation's EW capabilities are only effective if they are entirely indigenously developed. Where nation is less capable in manufacturing, the next best option is a smart partnership between military and local industry, supported by overseas partners. This equation will be the solution for EW local development. The overseas partners will have to be from the friendliest nations for us to benefit maximum transfer of technology and to have their governments' participation and support in our EW capability development.

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THE ROLE OF PSYCHOLOGY IN THE MILITARY

By Lt (Dr) Teoh Hsien-Jin

INTRODUCTION

Human nature is at the heart of the world's complex social and political scenarios. To cope with these changes, the military must be prepared to cope with crises and emergencies as they erupt. All organizations are made up of humans, with their unique personalities. In complex military operations, humans have to understand and respond to other humans in theatres of operations. Given that psychology is the study of human nature, what can psychology contribute to the institution of the Malaysian Armed Forces?

In this article, the reader is taken through the various applications of psychology that have been used within the military context in the last 60 years. The review would be grouped along various broad areas of psychological functioning such as health, social issues, organizational behaviour, personnel selection, training, survival and family matters. It begins with a brief description of the definitions and history of psychology.

DEFINING PSYCHOLOGY

The field of psychology is best described as the science of human behaviour. It comprises many theories of human behaviour which can be empirically tested. To solve problems, psychology makes use of a systematic process of decision making using systematic research. The ability to quantify human behaviours into numerical form makes psychology a science that can be applied to all fields that involve human behaviour. Where the military is concerned, many of these theories can be applied to a wide range of situations which assist in the efficiency of operations.

THE HISTORICAL ASSOCIATION BETWEEN PSYCHOLOGY AND THE MILITARY

The development of modern day psychology owes much of its rigorous tradition to the military. During the Second World War, psychologists were able to demonstrate their skills in the areas of personnel selection, combat trauma, battle fatigue, and even winning the population over.

During the Second World War, the U.S. Army used personnel selection instruments made up of intelligence tests (i.e., Army Alpha & Army Beta tests for literate and illiterate men), and also personality tests for officers. By the end of the war, psychologists had classified nearly 3,500,000 men and developed proficiency tests for 83 military jobs (Leahy, 2000).

CURRENT USES OF PSYCHOLOGY IN THE MILITARY

There are many areas within the military organization within which psychologists contribute their skills. This section provides the reader with a broad overview of some of these areas both in the past and in the present.

HEALTH

Psychologists are usually associated with the health field in the civilian and military sectors. Within the military, many psychologists operate in military hospitals and clinics, providing assessment, diagnosis and treatment for a wide range of behavioural and emotional problems. The following are some examples of their work in the health field.

Following a major air disaster or alternately a traumatic experience involving aircraft, some personnel may develop a fear of flying. Clinical Psychologists, along with Flight Surgeons, are regularly called upon to assist the personnel with overcoming their fears using a combination of methods that include pharmacotherapy, critical incident stress debriefing, cognitive therapy, systematic desensitization, and hypnosis (King, 1999).

In battle, it is normal for some soldiers to feel traumatized. During the Battle of the Somme (WWI), in France, soldiers often returned to the rear unable to sleep, having flashbacks and hallucinations. Clinical Psychologists and Psychiatrists were often called upon to relieve their suffering through the usage of a combination of anti-anxiety medications and psychotherapy (Laffin, 1999a). This is called Post-Traumatic Stress Disorder. In recent years, veterans of United Nation missions who have been caught in the cross-fire of warring parties and have been helpless to intervene, have often relived the trauma of the conflict every night when they go to sleep. A variety of psychotherapies which include cognitive-behavioural therapy have been employed successfully by psychologists to relieve these veterans of their suffering (Laffin, 1999b).

Psychologists began to take a keen interest in studying the effects of combat fatigue during the WWII battles between the Germans and the British in the Middle East. During the Battle of Kasserine Pass, psychiatric reactions amounted for 20% of the battlefield reactions (Cowdrey, 1994a). Cowdrey went on to note that treatment methodologies indicated that when given rest, regular food, and a chance to bathe, 85% to 90% of these casualties requested to be returned to their respective units at Guadacanal. It was further observed during World War II, that an infantryman became ineffective after 90 days of heavy fighting (Laffin, 1999c).

The Vietnam War highlighted many of the effects of Post-Traumatic-Disorder (PTSD) and also way in which veterans successfully coped with postwar adaptation. Veterans who viewed the impact of wartime experiences on their current life as positive, rather than those who viewed it as a negative, tended to adapt better (Dohmenrend, Neria, Turner, Turse, Marshall, Lewis-Fernandez & Koenen, 2004).

Some armies recognized that mental health was a serious issue, and made early attempts to prepare themselves for cases of combat fatigue, and PTSD. During D-Day, history was made when the British Army, recognizing the possibility of psychiatric causalities in large numbers, established the 32nd General (Psychiatric) Hospital that opened 30 days after D-Day. Within the first 10 days of D-Day, 10-20% of battle casualties were cases of psychiatric 'exhaustion' (Laffin, 1999b)

Of interest to the psychologist are the types of stressors facing modern day senior commanders. Investigations have been carried out on the impact of decision making and stress based on demands by the enemy, resources, physical limitations, political pressure, control of the media, public support, cooperation with allies, host-country authorities, military jealousy with pride, and campaign priorities. Understanding the impact of these factors and knowing the leadership capabilities of the commander allows the psychologist some ability to predict how the commander would cope with stress (Horner, 2000).

SOCIAL ISSUES

When large groups of people live and work together as an institution, a range of social problems can occur. These may range from prejudice to sexual harassment, substance abuse to accepting new codes of conduct, and family issues. Social psychology is a field that is concerned with studying groups of people, and eventually finding solutions to bring about changes in group behaviour.

Within groups of people, tolerance becomes a personal issue that all have to cope with. Everyone has personal habits. Some of these habits are those that everyone is comfortable with. However, there may be some habits that many are less comfortable with, especially when it comes to issues of gender, sexual preference, religious orientation and communication skills. Difficulties with acceptance of inter-personal habits have led to discrimination. It has been assumed that these different personal habits may destroy unit cohesion, resulting in a drop in morale. Psychological research however indicates that a person's sexual preference does not affect unit effectiveness especially when there is a focused task to be carried

out. All personnel, irrespective of sexual preference or gender, have been found to be equally effective under combat conditions. Social Psychologists within the military have been tasked with changing the attitudes of the masses who fear a break with long held traditions. To date, the interventions made by military psychologists have been successful with such issues such as acceptance of women within the U.S. Armed Forces (Herek & Belkin, 2006).

The recent spate of terrorism and bombings of civilian targets in major cities around the world has often been linked to groups with extremist religious ideologies. Nationwide security and anti-terrorism initiatives need to focus not just on arms and intelligence, but also on understanding the psychological vulnerabilities of the civilian population that could possibly become sympathisers or potential recruits for these militant groups (National Security Coordination Centre, 2004). Thus, national strategies both within and outside the uniform services need to be tailored towards communicating messages that warn against and persuade uniformed personnel to keep away from these extreme ideologies. The craft of tailoring these messages and designing these campaigns would largely be within the domain of social psychologists.

Psychologists also have a role in predicting the future stability of military families, in the event of government policies that result in military downsizing. What would happen if the military had to downsize due to drastic budget cuts? How would this affect the personnel? What would the effects be on their families? Would this downsizing be contributing to more social problems? Studies done on the effects of downsizing in the Russian Military indicate that there many effects on marital harmony. Russian Army Officers and their wives threatened with possible retrenchment indicate that the prospect of financial hardships, fear and distress of the future, negative events and low mood is associated with an increase in marital problems (Westman, Vinokur, Hamilton & Roziner, 2004). In addition, more marital instability occurs as a result of the move from a more male-orientated military organization where the officer husband has a high status, to a civilian organization where the wife, could be employed into a high status position (i.e., physician, lawyer, manager, banker, etc.).

ORGANISATIONAL BEHAVIOUR

Psychologists have long had a major role to play in developing theories of management and behaviour in organizations. Many of these theories of leadership, group dynamics, and management have been applied to many settings in the army, air force and navy.

The field of Organizational Psychology is largely concerned with the management of armed services. Within the Canadian Armed Forces, many reviews have been made on how psychology theories of personnel management can be applied to understanding and predicting work performance. Discussions by Hackett and DeGroot (2002) indicated that there are several areas that can be re-examined. The following are a summary of some of the key lessons to be learnt:

Firstly, measurement indicators of knowledge and performance need to be redefined. There needs to be a distinction made between knowing what to do, how to do it, and actually being able to carry out the task. In addition, motivation needs to be redefined as choosing whether to do the task, how much effort to put in, and how long to persist at the task.

Secondly, many tools are used to predict performance. However, these often result in broad meaningless scores, rather than specific dimensions of personality-related task specific indicators. Given the complexity of modern day military roles, predictive measures of tasks need to be task-specific. For example, predictors of leadership potential need to be based, not just on the performance in training, but more importantly on performance post-training. Performance in training reflects "maximal performance", whereas, performance whilst on-the-job captures "typical" performance.

Thirdly, job functions in the present day Canadian Armed Forces require personnel to be able to "adapt" to multiple tasks, in multiple circumstances (i.e., handling emergencies and crises). Thus, more attention to selection, re-evaluation and training needs to be given to the "adaptive behaviours" of the personnel.

Finally, performance measures are normally based on that of the individual. However, in reality, operations and tasks are normally realized based on the efforts of teams, rather than individuals. Thus, in the near future, evaluations of "team" personality and performance, rather than "individual" personality and performance may prove to be a more important consideration when predicting performance.

Many of the applications of psychology are in the area of highly specialized areas which can be applied to specialized military functions. Within the Air Force, common problems associated with flying aircraft at low-level at sub-sonic speeds involve visual-spatial problems. Problems arise from not being able to have a constant visual fix on the horizon, as a result of constant twists and turns by the aircraft. In addition, pilots may become disorientated and respond to inaccurate information provided by the organs of the inner ear as a result of the changes in gravitational force (Holden, 2004). Responding inappropriately to misinformation provided by bodily sensations and illusions provided by changes in visual orientation, can result in sudden air crashes, especially when the aircraft is flying at low level. Psychologists are often tasked with helping to understand this phenomenon, and to subsequently develop ways to train pilots to get used to these difficult situations (Haber & Haber, 2003).

PERSONNEL SELECTION

Ensuring that the military has the best possible recruits is the oldest application of psychology to the military. Psychologists have developed tests that not only test the intelligence and aptitude of a potential candidate for a job, but also place appropriate candidates into specialized fields based on the study of personality factors.

An important aspect of selection of personnel is to find out if they are likely to complete basic training. In addition to physical and academic aptitude measures, psychological personality screening tools are regularly used. Studies indicate that recruits generally differ slightly from civilians in terms of psychological adjustment, and that higher scores on the depressive personality indicators would be more likely to predict drop-outs in basic training courses (Holden & Scholtz, 2002).

The earliest use of psychologists and psychiatrists to test the suitability of men for service began in the US Army in 1940. During the war, a total of 1,992,950 men, comprising 30% of all rejections, were rejected on psychiatric grounds for such disorders as schizophrenia, psychopathic personalities and psychosis. Psychiatric disability was the largest single cause of eventual discharge from the US Army in World War II (Cowdrey, 1994b)

Selecting personnel who would potentially become efficient officers is a crucial aspect of developing the command structure within the military. Psychological tests have been regularly used in many armies, such as the Canadian Armed Forces. Assessment instruments regularly indicate that amongst the many important psychological traits that an officer would need to possess are surgency (i.e., the tendency to enjoy positions of leadership), and internal locus of control (i.e., to see positive rewards as being under one's personal control). Studies over a period of time indicate that personal reports of these traits, along with instructor reports, would appear to predict better candidate ability on Basic Officer Training Courses (Bradley, Nicol, Charbonneau & Meyer, 2002).

Transformational leadership is the ability to work within an ever changing environment, and to not only exhibit confidence and direction, but to also instill motivation and commitment within the personnel to achieve the organizational objectives. Studies on combat teams within the Singapore Armed Forces indicate that team leaders with transformational leadership abilities tended to be those who were more extroverted, less agreeable and had less neurotic personality traits (Lim & Ployhart, 2004). More importantly, the study indicated that these findings tended to be more applicable when the leaders were working under maximum stress, rather than typical daily contexts.

Working as a team does not just refer to Army and Navy combat scenarios, there are many applications to the Air Force. Aircraft that requires more than one flight crew requires coordination. Each team member must be clear of their roles, be cooperative and maintain a high level of flight discipline. Many mission failures may be attributed to human error, rather than mechanical disruption.

As a result of this, in both the civilian and military areas, the subject of Crew Resource Management (CRM), is an integral part of the training of flight crews. The training process is largely based on the psychological theories of team management and effective leadership. CRM includes a range of training tools (i.e., measurement, evaluation) and appropriate training methods (i.e., simulations, lectures) targeted at specific areas of teamwork and attitudes (Sherman, 2003). Aviation psychology research generally shows that increased amounts of certain types of communication are associated with lower error rates in flight crew decisions (Kanki & Palmer, 1993).

Maintaining the morale of military personnel during peacetime is crucial for order and military preparedness. In doing so, psychologists also have to monitor the kinds of occupational stressors that the personnel are facing. These might include employee's health, job satisfaction, organisational commitments, working area leadership and organizational bureaucracy. Research generally indicates that a less committed to the organization is related to lower the level of job satisfaction, and the higher the levels of occupational stress (Dobreva-Martinova, Villeneuve, Strickland & Matheson, 2002).

JOB TRAINING

The role of on-going training is an important aspect of military life. However, few studies consider what enhances or inhibits personnel learning a new job. Surely this must be an important issue that must plague commanders when beginning to think of the effectiveness of their units.

Models of factors that enhance or hinder learning have been partially developed using U.S. Navy officers (Morrison & Brantner, 1992). The models incorporate such factors as time-on-the-job, individual differences, job-characteristics, environmental factors, role complexity, job challenge, self-efficacy, and prior learning. Other factors include organizational climate, pace of work, and stage of work process. Models such as these help area managers to identify deficits in the work process and to systematically take steps to rectify the system of operations in order to maximize the

amount of learning that an enlisted officer gains from the task.

Despite all the training that military personnel go through, stress levels caused by being in actual combat or emergency situation can hinder performance. Factors that increase stress, and degrade performance, amongst personnel include excessive noise, time pressure, task load, threat, and performance pressure. Personnel who are not adequately prepared to cope with stress have poorer reaction times, make inaccurate decisions, focus only on one aspect of the problem and ignore the broader context, and tend to ignore the rest of the team (Driskell, Salas & Johnston, 2006). To prepare personnel to better cope with the effects of stress, to improve combat efficiency, Stress Exposure Training has been developed by the U.S. Army. The training includes giving accurate information to personnel on how stress affects them, learning cognitive control techniques to cope with stress, and training under conditions that approximate the operational environment.

SURVIVAL

Military personnel are often called upon to serve in harsh environments. Of interest to trainers is how personnel would cope and adapt into these environments. These harsh environments may range from cold wintry forests to hot humid jungles to hot dry deserts, high mountains and high aerospace conditions to the bottom of the ocean. An important training consideration that psychologists are involved in is known as "military adaptation to adverse conditions". Whilst both psychological and physiological deterioration occur in harsh conditions, the psychological conditions often begin much earlier.

Many examples of deterioration in performance have been documented. One aspect of training that flight surgeons are often involved in involves making flight crews aware of the dangers of decreased oxygen intake due to high altitudes (i.e., hypoxia), and decreased cognitive performance and changes in mood, using an altitude chamber (Holden, 2004). In extremely hot conditions, manual tracking begins to deteriorate at or above 29 degrees Celsius. Personnel, who are used to the lowlands, would

generally begin to develop altitude sickness above 1500m. Mood states begin to change, and after 1-4 hours at 4300m, personnel rate themselves as less friendly, less clear thinking, sleepier and dizzy, but happier. Thus mood and personality changes can occur at high altitudes (Krueger, 2003)

Continuous sustained operations and loss of sleep has major impacts on the human mind. Technological advancements mean that military personnel are often required to work continuously around the clock. Those working on night shifts may find that it is difficult getting prolonged sleep during the day, due to the noise and constant shifting of equipment during the day. An important aspect of the psychologist's job is to ensure that these personnel develop sleep management, and how to obtain adequate rest and sleep, in order that they may be able to function efficiently in modern combat situations (Kruegar, 1989, 1991).

FAMILY MATTERS

An important aspect of life in the armed forces is family life. By this, we mean the immediate family of the servicemen and women. Life in camp, and the uncertainty of when a spouse will be deployed, and when the family would have to move again, creates a unique type of stressor on the family members. If not carefully managed by the uniformed services welfare committees, the result can often be family breakdown. An important role for counselors and Clinical Psychologists is learning to understand the stressors of these families besides also attending to the many problems that occur within the family. Interventions range from in-depth psychotherapy to marriage guidance counseling to systems family therapy for the spouses (Wiens & Boss, 2006).

Relocation and movement is an integral aspect of military life. Difficulties with the transition from one military installation may result in disrupted family life. In the event that the family of the service personnel is not able to cope with the move, the result is family disharmony, leading to personnel not extending their military contracts (Burrell, 2006). Studies on military families indicate that amongst the factors that affect coping with frequent family relocation is increased financial expenditure, loss of spouse employment, and reduced social support network. Factors that

reduced the impact of relocation included spouses having desirable personality traits (i.e., internal locus of control, assertiveness, sense of coherence), problem focused coping strategies, and having a supportive unit. Often, the enlisted husband's coping abilities were predictive of not only his own, but also their wives' adjustment (Wamboldt et al. 1991).

TRAINING PSYCHOLOGISTS FOR SERVICE IN THE MILITARY

This article has described a range of experiences that psychologist have had with the military. In fact, much of the rise of modern Clinical Psychology owes its prominence in the modern world to developments within the military. To this end, a summary of the functions of a psychologist in the military would be as follows:

- Investigations of human factors in military organization
- Refining and development of programmes to improve human efficiency
- Research and development of protocols for personnel selection
- Investigation and development of leadership protocols
- Research into human conditions, and assistance with human tolerance training, in harsh environment
- Diagnosis and treatment of mental illness and rehabilitation after physical trauma
- Assistance with training schemes and improving team work efficiency
- Promoting increased morale amongst personnel
- Critical Incident Stress Debriefing during emergency situations
- Promoting increased resilience and family cohesion amongst the families of military personnel

The list of tasks and duties described above would require some form of organization within the military. The following are a list of ways in which this could be achieved.

- Identification of military personnel with degrees in Psychology
- Organise a core team of 5-10 staff with Psychology degrees as a specialized unit. Each team member would have one specialised area of Psychology applications to study and make recommendations on over a period of 1 year
- The team would need to be supervised by a Doctoral and a Masters level psychologist with an applied psychology qualification (i.e., Clinical, Orgaisational/Industrial)
- On-going in house training on specific areas would be organized for team members in the core applications of applied areas of psychology

- Information collected and recommendations made would be submitted to higher level command personnel in other areas to disseminate the information, and train other personnel

CONCLUSION

Psychology is a profession that is geared towards serving humanity. It does this not just in the business or medical fields, but also in many modern armies. As job descriptions become more complex, human resources becomes more valuable. In the military, battles are won based on the decisions made, and the performance of men. More can be done to select and prepare these personnel, and knowledge gained on the mental mindset of human performance would greatly aid the commander. As society continues to advance at a rapid pace, psychology is beginning to play a role in shaping the future of humankind.

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PERANAN DAN IMPLIKASI KOMUNIKASI DALAM KEPEMIMPINAN FORMASI/PASUKAN

Oleh Lt Kol Mohd Radzi bin Abd Hamid

"Sesungguhnya telah ada pada (diri) Rasulullah itu suri teladan yang baik bagimu (iaitu) bagi orang-orang yang mengharapkan (rahmat) Allah dan (kedatangan) hari kiamat dan banyak menyebut Allah"

Surah Al-Khafij: Ayat 103-105

PENDAHULUAN

Manusia dijadikan Allah S.W.T dari seketul tanah liat, kemudiannya ditiupkan roh. Di dalam syurga, manusia hamba Allah iaitu Adam dan Hawa berhubung atau berinteraksi dengan semua makhluk ciptaan Allah yang berada di dalam syurga. Hawa dan Adam berinteraksi sesama mereka, kemudian mereka berinteraksi dengan malaikat dan iblis. Akibat dari interaksi dengan iblis, Adam dan Hawa melanggar perintah Allah yang mengakibatkan mereka berdua diturunkan ke dunia. Asal usul kejadian membuktikan bahawa semua makhluk Allah S.W.T berinteraksi antara satu sama lain. Dalam erti kata lain mereka telah menjalinkan perhubungan atau lebih dikenali dengan komunikasi antara mereka dengan tujuan yang tertentu.

Sungguhpun Nabi Allah Adam dan Hawa diturunkan ke dunia atas alasan melanggar perintah Allah S.W.T tetapi hakikatnya ialah untuk menjadi khalifah kepada makhluk Allah yang lain di muka bumi. Bagi menjalankan tanggungjawab dan amanah ini, maka Allah mengurniakan akal kepada manusia bersama kelebihan-kelebihan lain. Dengan menggunakan akal dan kelebihan tersebut manusia berkomunikasi untuk mengurus dunia, keluarga dan diri sendiri. Tanggungjawab sebagai khalifah tidak akan tercapai atau terlaksana jika manusia tidak boleh berkomunikasi atau tidak melakukan aktiviti komunikasi antara mereka. Ini bermakna manusia tidak boleh tidak untuk melakukan aktiviti

komunikasi sebagai pelengkap kepada kehidupan harian. Tanpa melakukan komunikasi, barangkali dunia manusia menjadi beku dan sunyi. Pastinya komunikasi adalah satu perkara yang mempunyai peranan amat penting untuk manusia menjadi khalifah di muka bumi. Kepentingan komunikasi lebih terserlah lagi dalam sesebuah formasi/pasukan sama ada kecil atau besar yang sentiasa menagih kepemimpinan ketua atau majikan. Keberkesanannya ialah dalam mentadbirkan formasi/pasukan terletak kepada kebijaksanaannya dalam berkomunikasi dengan anggota-anggota dan pelanggan-pelanggan.

Kepentingan komunikasi tidak dapat dinafikan dan mempunyai peranan yang sangat impak tetapi implikasi sama ada negatif atau positif tidak dapat ditelah. Masalahnya ialah implikasi komunikasi sentiasa melebihi dari jangkaan yang sama sekali tidak terduga dan berlaku dalam ruang lingkup yang tidak diramal. Kesilapan dalam komunikasi boleh mengancam atau menggugat perhubungan negara bangsa. Kesilapan ini merangkumi aspek makna, kaedah atau cara mesej dihantar, tafsiran penerima, kefahaman antara penghantar dan menerima dan kesediaan penerima untuk mencerap mesej. Ini adalah kerana komunikasi seperti senjata yang mempunyai dua mata. Jika salah di tafsir atau dihantar, ia akan memberi maksud yang berbeza. Perkara ini menjadi lebih serius jika ia berlaku dalam sesebuah formasi/pasukan dan dilakukan oleh pemimpin.

DEFINISI

Kertas kerja ini akan membincangkan semua peranan komunikasi dalam formasi/pasukan. Jenis komunikasi yang akan dilibatkan ialah komunikasi lisan dan bukan lisan. Manakala aspek implikasi, kertas kerja ini akan melihat implikasi positif dan negatif. Keseluruhan perbincangan akan berfokus kepada kepemimpinan sesebuah formasi/pasukan termasuk pemimpin rendah dan pemimpin atasan. Bagi menentukan kefahaman kepada tajuk kertas kerja, dua definisi akan dibincangkan iaitu definisi '**komunikasi**' dan '**kepemimpinan formasi/pasukan**'.

Pelbagai definisi komunikasi dibuat oleh pakar-pakar komunikasi seperti Hoben, Berelson, Steiner, Miller, Gode dan Ruesch. Antara definisi komunikasi yang sering digunakan oleh para sarjana dan pengkaji komunikasi ialah definisi oleh Hoben, Ruesch, Berelson dan Steiber. Definisi yang dibuat oleh Ruesch (1975) bersifat agak umum. Beliau menyatakan '**komunikasi adalah suatu proses yang menghubung bahagian-bahagian yang terasing di dunia ini**'. Manakala Hoben (1954) pula menyatakan '**komunikasi adalah pertukaran secara verbal sesuatu idea atau pandangan**'. Hoben mengandaikan proses pertukaran idea berjaya dilaksanakan. Berelson dan Steiner (1964) mendefinisikan komunikasi sebagai '**proses pemancaran maklumat**'. Definisi ini tidak melihat atau mempertimbangkan hasil setiap komunikasi sama ada berjaya ataupun tidak.

Apakah yang dimaksudkan dengan '**kepemimpinan formasi/pasukan**?'. Sesetengah sarjana komunikasi mendefinisikan kepemimpinan sebagai **kemahiran komunikasi yang menggerakkan kumpulan ke arah pencapaian matlamat dan kesejahteraan kumpulan** (Barker, Wahlers dan Watson, 1955). Narimah (2002) menyatakan formasi/pasukan adalah **satu badan yang mengandungi kumpulan-kumpulan dan juga individu yang bekerjasama bagi mencapai matlamat tertentu**. Ini bermakna, kepemimpinan formasi/pasukan boleh ditakrifkan sebagai kemahiran berkomunikasi di dalam satu badan yang mengandungi kumpulan-kumpulan atau individu untuk mencapai matlamat formasi/pasukan demi kebaikan bersama.

KAITAN KOMUNIKASI DENGAN KEPEMIMPINAN

Persoalan pertama yang harus difahami ialah bagaimanakah komunikasi berkait dengan kepemimpinan dan mengapakah ianya menjadi terlalu teras. Hubungan ini dapat di lihat dari beberapa aspek. **Pertama, komunikasi adalah segala-galanya dalam perhubungan sesama manusia**. Seseorang pemimpin dari sebuah formasi/pasukan mega hingga ke institusi keluarga akan menjadi pemimpin yang berkualiti sekiranya ia mampu menterjemah idea dalam komunikasi yang paling berkesan. Kegagalan pemimpin dalam melontar secara jelas dan kegalalannya menyampaikan hasrat dan matlamat formasi/pasukan atau keluarga melalui komunikasi yang berkesan, menjadi batu penghalang kepada perhubungan akrab, kerjasama dan semangat pengorbanan anggota kepada formasi/pasukan antara pemimpin dan anggota dan formasi/pasukan.

Kedua, pemimpin diadili melalui komunikasi lisan dan tanpa lisan. Melalui perbualan percakapan, cara berjalan dan berpakaian dan segenap ruang lingkup, kehidupan seseorang pemimpin sentiasa terdedah kepada 'judgement' oleh anggotanya. Anggota sentiasa menilai perwatakan melalui gaya fizikal yang boleh di lihat oleh anggota. Justeru pemimpin hendaklah sentiasa berusaha membina imej secara aktif. Pemimpin bukan sahaja perlu melihat dirinya dalam tingkapnya sendiri, pada masa yang sama ia perlu melihat dalam tingkap yang tersembunyi yakni tingkap orang lain. Teori ini pernah diangkat oleh sarjana (Joseph Lark dan Harry Hont) melalui Teori Tingkap Johari¹ dan idea Imam Al-Ghazali². Imam Al-Ghazali menyatakan tidak semua perkara yang pemimpin tahu diketahui oleh anggota, begitu juga sebaliknya. Secara tidak langsungnya, pembinaan imej melalui komunikasi tahap lisan dan lisan boleh memperbaiki kekurangan lahiriah dan batiniah.

Ketiga, konsep komunikasi strategi. Bagi memastikan semua keputusan pemimpin dilaksanakan dengan berkesan. Keberkesaan

¹ Tingkap Johari adalah teori yang menerangkan situasi atau tahap tahu pemimpin dan anggota. Ia membahagikan keadaan kepada 4 bahagian iaitu kawasan terbuka, kawasan buta, kawasan tersembunyi dan kawasan tidak diketahui.

² Imam Al-Ghazali mengkategorikan manusia kepada empat jenis iaitu ia tahu bahawa ia tahu, ia tahu bahawa ia tidak tahu, ia tidak tahu bahawa ia tahu dan ia tidak tahu bahawa ia tidak tahu.

komunikasi pada hari ini di lihat sebagai tidak bergerak secara sendiri kerana perkembangan teknologi komunikasi yang tidak terbendung. Justeru teknologi komunikasi turut membantu dalam menjalankan urusan kepemimpinan antaranya ialah faks, telefon, komputer, e-mail, kamera digital dan lain-lain lagi. Masalah jarak tidak lagi wujud pada hari ini kerana pemimpin boleh berhubung atau berkomunikasi dengan anggotanya tanpa mengira di mana ia berada.

MASALAH KOMUNIKASI DALAM KEPEMIMPINAN FORMASI/PASUKAN

Permasalahan ini perlu di lihat dari aspek masalah komunikasi dalam kepemimpinan dan masalah kepemimpinan dalam komunikasi. Adalah malang jika ada **pemimpin yang tidak tahu akan kepentingan komunikasi yang berkesan dan seterusnya bertindak mengabaikannya** atau bersikap lewa ketika berkomunikasi. Dalam sesebuah formasi/pasukan terdapat beratus atau beribu anggota yang datang dari pelbagai rencam budaya dan latar belakang. Agama, budaya, bangsa, daerah yang berbeza antara satu sama lain memerlukan bentuk komunikasi yang berbeza ketika berhubung. Pemimpin tidak boleh merangkup sekali gus bahawa semua anggotanya sama. Dari aspek jantina sahaja sudah menagih kaedah komunikasi yang berbeza. Bagi formasi/pasukan yang ekstrem seperti Gerak Khas, kaedah komunikasinya secara total berbeza dengan komunikasi di sebuah pasukan bantuan perkhidmatan. Bahasa yang keras dan arahan yang tegas dan disampaikan dalam situasi serius ditagihkan dalam mentadbir sesebuah formasi/pasukan keselamatan. Manakala bahasa yang mesra dan penyampaian penuh diplomasi diperlukan oleh setiap pemimpin dan anggota ketika berkomunikasi dengan keluarga, isteri, anak dan pihak awam.

Oleh kerana **komunikasi seperti senjata dua mata**, maka komunikasi perlu disampaikan dengan baik, sempurna, sesuai dengan khalayak, sesuai dengan masa dan keadaan. Jika tidak, ia akan memberi maksud yang berbeza kepada anggota. Sekiranya saluran komunikasi yang tidak sesuai digunakan, kemungkinan mesej yang disampaikan tidak sampai sepenuhnya atau tidak sampai langsung. Situasi ini akan menjadikan kelam kabut jika anggota terus melaksanakan tugas

tanpa mendapat arahan yang jelas. Inilah masalah sebenar komunikasi dalam kepemimpinan formasi/pasukan. Sejarah kepentingan penyampaian komunikasi lisan ditunjukkan oleh Panglima Perang China iaitu Sun Tzu ketika diuji Maharaja China. Sun Tzu mengatakan setelah arahan diberikan tetapi anggota masih tidak dapat melaksanakan dengan baik atau salah pelaksanaannya, maka berkemungkinan arahan yang diberikan tidak jelas dan terang. Setelah arahan diberi dengan jelas dan terang dan berulang tetapi anggota masih tidak dapat melaksanakannya dengan baik atau salah melaksanakannya, maka kesalahan diletakkan pada pemimpin rendah, maka pemimpin rendah perlu di hukum.

Sesetengah pemimpin dalam formasi/pasukan, buta teknologi komunikasi atau bersikap negatif dan menolak teknologi. Pemimpin khususnya generasi terdahulu yang masih tinggal menjadi pemimpin atasan sesebuah formasi/pasukan menolak teknologi komunikasi. Teknologi komunikasi bergerak pantas dan menjadi lebih kreatif dan inovatif. Sikap pemimpin yang menolak teknologi komunikasi menjadikan mereka buta pada peralatan tersebut sedangkan anggotanya celik pada peralatan tersebut. Sikap pemimpin seperti inilah yang memberi masalah komunikasi pada masa hadapan kerana masih bergantung pada sistem lama. Dari sudut yang lain, barangkali tidak keterlaluan jika dikatakan boleh dan mungkin akan menjadi realiti pada masa akan datang yang mana ketua seksyen hanya menghantar arahan kepada anggotanya melalui pesanan SMS. Sungguhpun ia melanggar budaya dan amalan tetapi kaedahnya amat mudah dan cepat.

MASALAH KEPEMIMPINAN DALAM FORMASI/PASUKAN

Selain dari masalah komunikasi dalam formasi/pasukan, pemimpin juga boleh menjadi masalah kepada formasi/pasukan. Formula formasi/pasukan yang berjaya iaitu pemimpin yang baik bergantung pada bakat kepemimpinan dan digabungkan dengan ilmu dan pengetahuan pengurusan yang sentiasa dikembangkan. **Bakat kepemimpinan sahaja tidak mencukupi** kerana tanpa memiliki ilmu, seseorang pemimpin akan menjadikan suatu formasi/pasukan tidak mampu bersaing pada masa

hadapan dan akan tenggelam kesemuanya iaitu pemimpin dan formasi/pasukan itu sendiri. Oleh itu, pemimpin dan formasi/pasukan hendaklah memiliki ilmu dan pengetahuan yang mencukupi bagi membolehkannya bekerja dengan baik.

Kedua, pemimpin tidak kreatif. Sesetengah pemimpin beku atau tidak ingin berubah. Langsungnya idea dan kaedahnya tidak berupaya menarik minat anggota dan tidak mampu bersaing. Pendekatan kepemimpinan kreatif dan terangsang adalah satu pendekatan yang sentiasa didambakan oleh anggota. Ini melibatkan konsep inovasi, dan tidak 'rigid' sehingga beku dalam pendekatan. Contoh pendekatan kreatif ialah memberi komitmen peribadi kepada anggota melalui mendengar pendapatnya, bijak mengukur nilai sumbangan, menjadikan diri sebagai contoh keterbukaan, imaginatif, berjiwa besar untuk formasi/pasukan bukannya kepentingan diri.

Ketiga, pemimpin mementingkan diri sendiri. Tidak dinafikan adanya pemimpin yang mementingkan diri sendiri. Situasi ini sering berlaku di kalangan pemimpin rendah. Memandangkan pemimpin rendah sentiasa berhubung dengan anggota bawahan, maka hal ini akan menimbulkan masalah yang serius kepada formasi/pasukan dan menjelaskan kepemimpinan dalam formasi/pasukan. Mencari kemenangan peribadi dan taksub dengan mempopularkan sekelompok anggota sahaja sehingga boleh menolak semangat ukhuwah, kerjasama antara anggota, menolak '*espiriti de corps*' boleh mengikis kepercayaan anggota dan membantutkan pengembangan formasi/pasukan. Kesan yang lebih buruk ialah anggota menolak penerimaan terhadap pemimpin, menanam sikap prejudis dan negatif terhadap setiap tindakan atau keputusan pemimpin, melecehkan nasihat dan idea pemimpin, langsungnya menggagalkan budaya motivasi dalam formasi/pasukan. Situasi ini dapat dilihat pada peristiwa yang berlaku dalam zaman pemerintahan salah seorang Khalifah Rasulullah iaitu Sayidina Ali Abi Talib. Sayidina Ali bin Abi Talib pernah ditanya mengapa para anggotanya berpecah belah dan tidak seperti para anggota zaman Rasulullah? Ali menjawab "Ini kerana para anggota pada zaman baginda tidak seperti diri yang menyaoal". Hakikat yang tidak boleh ditolak ialah ramai yang meminta untuk dipimpin tetapi tidak sanggup berkorban dan tidak ada keyakinan terhadap yang dipinta.

Keempat, dewasa ini sering berlaku krisis kepemimpinan dalam formasi/pasukan. Krisis kepemimpinan ini boleh berlaku dalam dua situasi iaitu antara pemimpin dengan pemimpin dan antara pemimpin dengan anggota. Ianya tidak mempedulikan sama ada pemimpin tersebut masih berkhidmat atau telah bersara. Kemelut yang dihadapi oleh Dr Mahathir Mohammad dan Dato' Sri Abdullah Ahmad Badawi adalah satu contoh krisis kepemimpinan yang jelas antara pemimpin dengan pemimpin. Manakala krisis di Indonesia adalah contoh krisis kepemimpinan antara pemimpin dengan anggota atau pengikut. Krisis kepemimpinan hari ini terlalu aneh, unik dan komplikated. Isu remeh seperti pergaduhan anak-anak, perselisihan idea para isteri, dan merebut tempat letak kereta boleh menjadi besar dan tidak terkawal hingga boleh mewujudkan puak-puak tertentu dalam formasi/pasukan. Justeru perkara ini perlu di pantau. Krisis dan konflik kepemimpinan akan terus berlaku, jika unsur jiwa anggota berkecamuk atau berlaku konflik. Ini merupakan satu cabaran kepemimpinan masa hadapan. Seseorang pemimpin yang gagal mengawal anggotanya boleh mencetuskan krisis kepemimpinan. Krisis ini boleh menyebabkan pemimpin hilang kuasanya.

Kelima, pemimpin tidak mempunyai karisma atau cahaya wajah. Karisma adalah kualiti tinggi atau istimewa yang wujud dalam kepemimpinan dan berupaya menarik perhatian anggota yang banyak serta memberi inspirasi dan menggalak kecenderungan mengikut untuk mengikutinya. Kefahaman kepada karisma berubah mengikut corak komunikasi semasa. Peranan komunikasi telah menukar imej siapakah yang dimaksudkan dengan pemimpin berkarisma dengan komunikasi bukan lisan seperti cara berpakaian boleh meletakkan kelompok PTT Kanan dalam konteks pemimpin berkarisma moden dan hebat berbanding dengan maksud yang difahami sebelum ini. Melalui komunikasi yang dicurahkan, pemimpin berkarisma boleh dibentuk dan dipotretkan. Bagaimana memperolehnya?. Karisma atau cahaya wajah diperoleh melalui beberapa cara iaitu pemberian terus oleh Allah, keduanya daripada pergaulan dengan mereka yang memiliki karisma seumpamanya, dan menyedari bahawa dalam diri kita telah sedia ada karisma yang tersendiri dan hanya memerlukan pengempangan. Masyarakat hari ini melihat pemimpin berkarisma melalui 3 aspek iaitu karakteristik pemimpin, ciri-ciri anggota

dan keperluan suasana. Gabungan ketiga-tiga ramuan ini berupaya mewujudkan perhubungan dan kepemimpinan berkarisma secara bersama. Selain dari itu ia juga boleh di lihat dari aspek persepsi manusia kerana anggota sentiasa menjadi hakim kepada pemimpin mereka dan keyakinan diri yang tinggi atau '*will power*'.

Keenam, pemimpin tidak bertenaga dan kurang semangat. Untuk menjadi seseorang pemimpin, ia mestilah mempunyai kekuatan dan tenaga fizikal dan rohani. Dukungan spiritual mestilah kuat. Dalam aspek ini, tenaga bukanlah semata-mata tenaga fizikal tetapi merangkumi tenaga pembakar semangat untuk terus bertindak dan memimpin serta melontar tenaga yang hebat tersebut dengan semangat kasih sayang terhadap anggotanya. Ketika Indonesia dipimpin oleh seorang Presiden yang buta iaitu Gus Dur, kita melihat beliau sebagai amat tidak berdaya dan tidak bertenaga. Jika pemimpin sendiri hendak berjalan mengharapkan bantuan orang lain, bagaimanakah ia boleh dan mampu memimpin negara. Isu ia dipimpin oleh satu kuasa lain yang tidak boleh di lihat hanya isu emosi dan sensasi kepercayaan yang tidak beralas.

PERANAN KOMUNIKASI DALAM KEPEMIMPINAN FORMASI/PASUKAN

Nyatanya komunikasi mempunyai peranan penting dalam kejayaan sesebuah formasi/pasukan. Ini tertakluk kepada cara dan kaedah ia diaplifikasi dan digunakan. Pemimpin formasi/pasukan yang bijak berkomunikasi dan sentiasa berusaha mempertingkatkan keberkesanannya komunikasi akan menjadi pemimpin yang dihargai dan berjaya dalam mencapai hasrat dan matlamat dirinya dan formasi/pasukan. Komunikasi menjadi perantaraan antara pemimpin dengan anggota dalam sesebuah formasi/pasukan. Dalam menyampaikan arahan dan amanat atau visi formasi/pasukan, pemimpin akan berkomunikasi dengan anggota. Arahan dan amanat disampaikan melalui pelbagai kaedah seperti ucapan di dalam perhimpunan, e-mail, surat-menjurut, papan hebahan atau laman web. Manakala hebahan maklumat berkaitan formasi/pasukan dan aktiviti yang dijalankan boleh disampaikan melalui poster, 'flyers', laman web dan iklan-iklan. Pemimpin menggunakan laman web untuk memaparkan amanatnya dan perkara yang ingin dicapai. Ucapan

ketika perbarisan adalah komunikasi secara langsung yang berlaku. Ada sesetengah formasi/pasukan yang merancang program tersendiri untuk membantu program pemimpin seperti malam pengajian. Satu mekanisme atau program bagi memastikan wujudnya kesinambungan wawasan dan idea pemimpin ialah mewujudkan program kepemimpinan untuk melahirkan pemimpin pelapis yang berwibawa dan berpengalaman.

IMPLIKASI KOMUNIKASI DALAM KEPEMIMPINAN FORMASI/PASUKAN

Jika implikasi positif yang terjadi, ia tidak menjadi sebarang kesulitan atau halangan kepada kepemimpinan formasi/pasukan. Masalahnya di sini ialah apabila implikasi negatif yang berlaku. Ini akan berlaku apabila komunikasi tidak berlaku sebaiknya atau gagal di praktik dengan baik dalam formasi/pasukan. Manakala pemimpin formasi/pasukan pula gagal untuk berkomunikasi dengan baik. Apabila hal ini terjadi, ia akan mencetus beberapa implikasi negatif. **Pertama, keputusan dan penyelesaian kepada sesuatu perkara sukar dicapai atau tidak tercapai.** Dalam setiap perbincangan sama ada antara pemimpin dengan pemimpin atau pemimpin dengan anggota atau anggota dengan pihak awam, jika mereka menghadapi masalah berkomunikasi, maka kata putus tidak akan tercapai atau susah hendak dicapai.

Kegagalan berkomunikasi akan turut mematikan kreativiti dan inovasi baru. Anggota dan pemimpin yang tidak faham akan kehendak dan misi formasi/pasukan akan menjadi segerak dan langsung tidak mahu berusaha untuk keluar dari kepompong kebiasaan. Mereka seolah-olah telah mati kreativiti dan gagal mendapatkan idea baru. Sama ada ia berlaku secara tidak disedari ataupun disengajakan oleh anggota kerana tidak suka kepada pemimpin yang gagal memahami komunikasi mereka.

Komunikasi yang tidak berkesan akan menggagalkan penghantaran maklumat. Pengulangan proses komunikasi yang sama akan membazir masa dan mengakibatkan mesej penting diterima lewat ketika ianya tidak lagi mempunyai nilai. Maklumat berkaitan kematian anggota, kehilangan peralatan penting dan perkara kebajikan, jika lambat dihantar akan memberi kesan

buruk dan melemahkan moral anggota. Di samping itu, sesebuah formasi/pasukan akan menjadi tidak produktif.

Kegagalan komunikasi akan menyebabkan sesebuah kepemimpinan formasi/pasukan lemah terhadap perkara-perkara asas seperti keperluan kebajikan anggota, keluarga dan pasukan. Keperluan hakiki anggota tidak disampaikan kepada pemimpin maka, masalah tidak boleh diselesaikan. Contohnya, lima anak muda dari Kuala Lumpur pergi bekerja sambilan ketika cuti sekolah. Mereka mengambil upah membanting padi di negeri Kedah. Pada suatu hari, Si Ahmad, salah seorang dari anak muda tersebut berkomunikasi dengan majikannya iaitu Haji Dolah yang beristeri dua. Kata Ahmad "Pak Haji, semalam saya pergi rumah Pak Haji tapi Pak Haji tak ada kat rumah". Dari perbualan ini, Pak Haji akan mengesyaki sesuatu yang tidak kena pada isterinya kerana dikunjungi oleh anak muda tersebut pada waktu malam sedang ia tidak ada di rumah (giliran isteri tua). Jika kegagalan komunikasi ini lebih serius, kemungkinan anak muda tersebut di tumbuk atau di marah oleh Pak Haji mungkin berlaku. Bagi anak muda tadi, ia berkunjung ke rumah Pak Haji pada hari sebelumnya (semalam). Manakala bagi Pak Haji sebagai orang Kedah ianya bermaksud 'semalam' kerana hari sebelumnya bagi orang Kedah disebut 'kelmarin'. Hakikatnya anak muda berkenaan berkunjung ke rumah Pak Haji pada petang hari sebelumnya kerana ingin memaklumkan bahawa mereka ingin berhenti kerja.

Implikasi dari kegagalan berkomunikasi atau komunikasi yang tidak berkesan juga boleh mengakibatkan kepemimpinan formasi/pasukan gagal membuat pilihan atau gagal memperoleh perkara yang dipilih. Perkara ini melibatkan banyak aspek dalam komunikasi seperti laras bahasa dan kefahaman yang sama. Jika komunikasi berlaku dalam laras bahasa yang berbeza, kegagalan kefahaman kepada mesej akan menjelaskan pilihan yang telah dibuat. Sebagai contohnya, seorang pemuda dari Kedah telah berhenti rehat di sebuah warung kopitiam di Kelantan ketika hari hujan. Ketika sedang menghirup kopinya dan menanti hujan teduh, tiba-tiba ia terpandang seekor lipan bara sedang menjalar di bawah meja masak pekedai. Pemuda tadi memanggil pekedai berkenaan dan menjerit "katok! katok! katok!",

sambil jarinya menunjuk kepada lipan bara. Si pekedai akan mengatakan "mu ni bodo sangaat, tu bukan katok la, tu lipe la". Ketidak selaras bahasa memberi maksud yang berbeza jika ia salah digunakan. Dalam contoh di atas, anak muda tadi meminta si pekedai memukul lipan tersebut kerana bagi orang utara 'pukul' di sebut sebagai 'katok'.

BAGAIMANA MENJADI SEORANG PEMIMPIN YANG MEMILIKI KAEDAH KOMUNIKASI TERBAIK

Komunikasi yang baik dan berkesan akan menjamin kejayaan sesebuah formasi/pasukan. Manakala seorang pemimpin yang berupaya berkomunikasi dengan baik dan berkesan dan berjaya memahami mesej anggota akan menjadi seorang pemimpin yang disegani dan dihormati. Terdapat beberapa kaedah yang boleh diaplikasikan oleh seseorang pemimpin, jika ia ingin menjadi seorang pemimpin yang berjaya dalam komunikasi. **Pertama, sahkan kewujudan anggota.** Hubungan mata merupakan kesaktian dalam komunikasi antara perorangan. Bak kata bidalan 'dari mana datangnya cinta?, dari mata turun ke hati'. Pemimpin hendaklah melakukan hubungan mata ketika berhubung dengan anggotanya. Antara kaedah lain yang selari dengannya ialah memandang dan berhadapan dengan anggota yang di hubung ketika itu. Peruntukan beberapa saat pada proses komunikasi mata. Fitrah manusia ialah tidak menyukai pemimpin yang menyisihkannya atau tidak mahu disisihkan lebih-lebih lagi oleh pemimpinnya. Sekiranya komunikasi dijalankan secara acuh tak acuh maka anggota akan beranggapan pemimpin tersebut telah menyisihkannya. Tanpa mengira apa jenis anggota, berpangkat atau tidak, pernah buat salah atau tidak, hitam putih, sempurna atau tidak upaya, mereka memiliki hak yang sama terhadap pemimpin mereka.

Kedua, zahirkan dan war-war penyataan penghargaan. Terdapat anggota yang memiliki budi pekerti yang tinggi dan sentiasa berhasrat untuk berbudi kepada pemimpinnya. Jika mereka telah berbudi, seseorang pemimpin hendaklah menyebut kebaikannya kepada dirinya supaya dia merasa budi dan usahanya di hargai. Anggota akan lebih teruja jika budi tersebut dihargai di hadapan keluarga, sahabat dan pemimpin bawahannya. Idea-idea ke arah penghargaan yang lebih kreatif boleh

memberi kesan yang amat positif. Antaranya ialah menyediakan ruang dalam majalah formasi/pasukan atau papan kenyataan untuk memaparkan anggota terbaik bulanan, menyampaikan sijil penghargaan, dan menyebut nama, jabatan dan kebaikan yang telah dilakukan ketika ucapan harian. Dengan melakukan atau mengamalkan sikap sebegini, ini sama sekali tidak akan menjadi ‘kudis’ kepada pemimpin berkenaan. Bahkan beliau akan lebih dihormati dan disegani oleh anggotanya.

Ketiga, guna bahasa yang berkesan dan bermutu tetapi mudah difahami. Pemimpin hendaklah menggunakan bahasa yang mudah difahami oleh anggotanya yakni laras bahasa yang sama. Dalam aspek bahasa, jika pemimpin boleh berbahasa seperti anggotanya, ia akan lebih disanjung. Contoh seorang pemimpin Inggeris boleh berbahasa Melayu dengan baik, ia akan lebih dihargai. Antara contoh lain, seorang artis yang terkenal akan dicemuh jika ia langsung menolak bahasa ibunda yang mana ia harus mengetahuinya. Apa pun alasan yang disandarkan, kita sebagai rakyat Malaysia yang sejak merdeka telah mengetahui ‘Bahasa Melayu adalah teras bangsa’ atau ‘bahasa jiwa bangsa’, tidak boleh menerimanya. Sebagai seorang rakyat Malaysia, kita wajib boleh bercakap bahasa kebangsaan iaitu Bahasa Melayu. Jika boleh disandarkan kepada konsep hukum, tidak hukum sunat, harus dan makruh terhadap Bahasa Malaysia. Ianya jatuh kepada hukum wajib yakni jika meninggalkannya, ia akan berdosa besar. Begitu perlambangan yang boleh digambarkan tentang pentingnya keselarasan bahasa. Kepentingan isu bahasa yang mudah difahami dan lebih dapat dirasai, jika kita menjawab soalan ini. Apakah ertinya perkataan ‘kredebiliti’ dan ‘komprehensif’ kepada seorang perajurit muda yang baru melapur di-pasukan? Oleh itu gunalah bahasa yang mudah.

Keempat, berusaha meningkatkan keyakinan angota kepada pemimpin. Pemimpin hendaklah sentiasa berusaha untuk menjadi pemimpin yang terbaik, terampil dan dihormati. Implikasi dari ini ia akan meningkatkan keyakinan angota pada setiap keputusan yang di buatnya. Kelemahan dan sikap tidak tegas pemimpin bawahan telah menimbulkan keresahan di kalangan pemimpin atasaran. Rata-rata menganggapnya sebagai kudis kepada segala

masalah semasa. Keresahan ini mungkin akan menjadi lebih serius dan memungkinkan angota bertindak untuk menolak pemimpin bawahan. Kemungkinan di kalangan pemimpin bawahan sendiri seperti Penolong Ketua Platon, Ketua Seksyen, dan Penolong Ketua Seksyen yang tidak meyakini kepada kebolehan pemimpinnya. Bagi mengatasi keresahan ini, setiap pemimpin hendaklah berusaha untuk meningkatkan keyakinan anggotanya. Beliau harus memperbaiki mutu komunikasi termasuk cara bercakap, kaedah melontar idea, cara menjawab soalan anggota ketika mesyuarat kebajikan dan teknik berhadapan dengan anggota yang dipimpinnya.

Kelima, pemimpin yang tidak mempunyai masa dengan anggotanya, di lihat sebagai pentingkan diri sendiri atau membelaangkan hak anggotanya. Untuk menjadi seorang pemimpin yang berjaya, kita hendaklah meluangkan masa bersama anggota. Sesaat bersama anggota seperti setahun tidur bersamanya. Anggota akan teruja, jika pemimpin mereka mempunyai masa untuk melihat dan mendengar masalah mereka. Dalam aspek ini, komunikasi lisan atau berhadapan di lihat memainkan peranan penting. Contohnya anggota tidak mahu berhubung dengan KSM atau Penolong Ketua Platon yang dianggap sebagai perantara. Mereka mahu berhubung terus dengan Ketua Platon, Ketua Kompeni dan Pegawai Memerintah/ Pemerintah yang mereka sanjung. Kepentingan untuk meluangkan masa ini boleh dilihat dari amalan pemimpin jepun yang mana mereka sentiasa mengamalkan budaya pemimpin turun padang. Pemimpin Jepun berkunjung ke rumah anggota, bermain, makan dan santai bersama anggota. Para pemimpin Jepun dilihat sentiasa mempunyai masa untuk anggota dan bersama anggota merentas sempadan budaya. Amalan mereka telah berjaya merapatkan hubungan. Satu perkara yang perlu diingat ialah ketika pemimpin turun padang, beliau hendaklah menjadi sebahagian dari anggotanya. Perkara ini boleh dicapai melalui cara berpakaian seperti mereka, berjalan bersama-sama, makan seperti mereka dan lain-lain lagi. Satu masa dahulu, kita dapati beberapa aktiviti sosial ketenteraan yang fokus kepada ‘pemimpin bersama anggota’ tetapi pemimpin gagal bersama dengan mereka. Amat tidak sesuai, seorang pemimpin berpakaian serba mahal, bertali leher dan berkot ketika berdamping dengan anggota yang rata-ratanya berpakaian biasa, pemimpin hanya berbual dengan pemimpin

sahaja kerana mereka diletakkan di meja yang sama, dan jika lawatan diadakan pemimpin hanya tahu marah itu dan ini.

IDOLA ATAU ‘ROLE MODEL’

Kemahiran hubungan kemanusiaan untuk memahami corak pemikiran para anggotanya adalah penting kepada menjana misi formasi/pasukan. Bagi yang dipimpin, perlu bersedia mempelajari corak pemikiran dan gerak kerja pemimpin. Konsep kepemimpinan Rasulullah berteraskan Al-Amin dan bijaksana membaca keadaan serta sejarah perkembangan sistem Khalifah boleh dijadikan perbandingan dan panduan. Rasulullah telah mempamerkan satu contoh dan teladan yang amat baik untuk diikuti oleh seorang pemimpin. Sikap Rasulullah yang suka pada kesederhanaan, rapat dengan anggotanya, mendengar suara dan pendapat para sahabat, menghargai jasa dan tenaga anggota, mempamerkan contoh kepemimpinan yang baik telah menjadikan beliau sebagai pemimpin yang agung. Semua perkara di atas telah dipamerkan oleh Rasulullah melalui komunikasi yang berkesan. Terdapat beberapa Khalifah selepas seperti Sayidina Umar Al Khatab yang telah berjaya kerana mengikuti kaedah dan ‘style’ kepemimpinan yang ditinggalkan oleh Rasulullah. Sesetengah sarjana mengatakan kejayaan Ghandi memenangi hati rakyatnya kerana beliau mengambil contoh kepemimpinan Sayidina Umar Al-Khatab.

Setiap kita yang bercita-cita untuk menjadi seorang pemimpin sama ada pemimpin sebuah formasi/pasukan ataupun sebuah keluarga, kita perlulah ada satu atau dua ‘role model’ yang kita sanjung. Kita berhasrat dan menanam mimpi untuk menjadi pemimpin sepertinya atau lebih baik dari itu. Barangkali kita tidak tahu atau tidak menyedari bahawa si A adalah ‘role model’ yang telah kita pilih. Jawapan ini boleh diketahui dengan menjawab soalan ini. Siapakah pemimpin yang anda sanjung

atau segani? Siapakah Penolong Ketua Platur yang anda rasa terbaik sejak berkhidmat di dalam Kompeni ini?

KESIMPULAN

Melalui perbincangan di atas yang telah menyentuh pelbagai antaranya ialah peranan komunikasi dan pemimpin yang saling berkait dan kesannya pada sesebuah formasi/pasukan. Melaluinya kita dapat melihat betapa pentingnya komunikasi kepada kepemimpinan formasi/pasukan. Sesebuah formasi/pasukan boleh runtuh dan tidak terkawal kerana gagal mempraktikkan komunikasi yang berkesan di kalangan anggota dan pemimpin mereka.

Perbincangan di atas lebih kepada melihat implikasi negatif dan bagaimanakah cara mengatasinya. Jika terdapat implikasi positif ianya tidak menjadi hal, bahkan lebih baik keadaannya. Setiap pemimpin harus sedar bahawa komunikasi berperanan besar dalam kejayaan formasi/pasukan. Justeru, mereka perlu sentiasa berusaha untuk berkomunikasi dengan lebih baik dan efektif dengan menggunakan teknik-teknik komunikasi yang tertentu dan beberapa kaedah sebagai panduan. Pemimpin tidak harus bersifat pasif dan statik dan menolak idea atau teknologi baru dalam hal komunikasi kerana ini akan mendatangkan kesan yang baik dan akan membangunkan formasi/pasukan yang disertai.

Sesebuah formasi/pasukan dan pemimpin di dalamnya perlu untuk mengikuti perkembangan teknologi komunikasi. Sekiranya tidak, mereka akan ditinggalkan dan kalah bersaing dengan formasi/pasukan lain yang mengikutinya kerana teknologi komunikasi tidak akan menunggu kita. Peranan komunikasi menjadi lebih penting, jika melibatkan formasi/pasukan yang berdasarkan prestasi dan kejayaan. Pihak luar akan rasa terikat pada formasi/pasukan yang mempraktikkan komunikasi yang agak baik dan menghargai peranan mereka.

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Ditauliahkan oleh Seri Paduka Baginda Yang Dipertuan Agong sebagai Leftenan Muda di dalam Rejimen Askar Melayu Diraja pada tahun 1986. Telah berkhidmat di dalam Angkatan Tentera Malaysia selama 22 tahun dan memegang pelbagai jawatan. Mempunyai kelulusan dalam Diploma Lanjutan Pengajian Strategi dan Keselamatan (UKM), dan Sarjana Sains Pengurusan Strategi (Wellington). Beliau kini sedang mengikuti pengajian secara sambilan dalam bidang sarjana komunikasi di UPM. Antara artikel-artikel yang pernah disiarkan oleh Sorotan Darat ialah Membina Tradisi Berilmu di dalam Angkatan Tentera Malaysia , Rampasan Kuasa: Angkatan Tentera Malaysia sebagai Institusi Berkecuali dan Changing Perceptions of Security: From Military to Ecological.

INTERNATIONAL NEGOTIATIONS: IMPACT ON GLOBAL DIPLOMACY

By Mej Inderjit Singh a/l Tara Singh

International negotiations provide the platform for peace diplomacy and prevent conflict escalating into protracted divergence for inter and intra nations. Global diplomacy is consistent with restructuring aggressiveness into table talks irrespective of cultural conformity. In the modern era the sacred impact in peace and harmony has been the pride of attempted international diplomacy strife by the efforts of leaders in recognizing the rights and holistic values of mankind through successful negotiations.

"Let us move from the era of confrontation to the era of negotiation"

Richard M. Nixon

INTRODUCTION

Negotiations can be defined as an attempt to explore and reconcile conflicting positions in order to reach an acceptable outcome. Whatever the nature of the outcome, which may actually favor one party more than another, the purpose of negotiation is the identification of areas of common interest and conflict. Depending on the intentions of the parties, the areas of common interest may be clarified, refined and given negotiated form and substance. Areas of difference can and do frequently remain irreconcilable. The process of negotiation itself is sometimes conceived of in an across the table sense. While the proceedings may take this form at some stage, the overall process, especially in a multilateral context is better understood as including more informal activities leading up to or during negotiations and exchanges of proposals and other consultations.

Diplomacy is the art and practice of conducting negotiations between representatives of groups or nations. It usually refers to international diplomacy, the conduct of international relations through the intercession of professional diplomats with regard to issues of peace-making, culture, economics, trade and war. International treaties are usually negotiated by diplomats prior to endorsement by

national politicians. International negotiation is as it says inter-national. It is about negotiation between countries. International negotiation occurs all the time between governments. It also happens between individuals and companies, where the traps and tricks of cross-border negotiation can ensnare even the most experienced home-country negotiators. International negotiation is often not just between individual people, but between large delegations, each of which is well organized and where every person has specialized and skilled work. There may be cultural experts, linguists and subject specialists as well as a chief negotiator and support negotiators. In a complex negotiation, there may be multiple and interlined sub-negotiations going on at the same time, for example where a trade negotiation includes deal involving various industries and interests. This paper will look into the structure of international negotiations and diplomacy in enabling to foster peace in conflicts and citing examples which depicts previous true even happenings globally.

INTERNATIONAL NEGOTIATIONS

Negotiation and conflict resolution are central elements of the political process, whether in international diplomacy, collective bargaining

SUBJECT	ILLUSTRATION
POLITICAL	Communiqués, draft resolutions, extradition, cultural agreement, boundary changes, exchanges of Prisoners of War (POW), air hijacking, establishment of diplomatic relations, improvement or normalization of relations
DEVELOPMENT	Loan, bilateral aid (personnel, equipment), project finance, international capital market borrowing, inward investment, capital transfer, debt rescheduling
CONTRACTUAL	Offshore exploration rights, sale/purchase of oil, LNG, equipment purchases, hiring of foreign personnel
ECONOMIC	Trade agreement, balance of payments standby facility, tariff, anti dumping, textile quota agreement, trade redistribution negotiation, sanctions
SECURITY	Transit, over flight, establishment of border commission, arms purchase, bilateral security pact, joint development of weapons, mandate of peacekeeping force, base agreement, arms control
REGULATORY	Convention against the use of mercenaries, law of the sea flags of convenience, air services, fisheries, environmental, World Trade Organization, international commodity agreement, shipping, health, narcotics
ADMINISTRATIVE	Inward/Outward visit, acquisition of land or buildings for embassy, opening trade mission, visa abolition agreement, consular access to detained nationals, headquarters agreement, closure of international or regional organizations

Table 1: Classification Of Subjects Handled In International Negotiations

in labor disputes, post-election formation of coalition governments, or administrative budgeting. Classification of subject matters handled in international negotiations can be summarized as in Table 1.

Conflict is indeed an inevitable part of political life. The task on both theoretical and practical levels, however, is to understand how conflict can best be managed. In terms of practical politics the consequences of negotiations can be of supreme importance and are readily apparent; for example, we need only cite nuclear nonproliferation agreements, government intercession in wage talks, legislative coalition building, NATO expansion or Kofi Annan's mediation in Iraq to recognize such salience. The theoretical issues behind real world negotiations are equally weighty: In Rwanda, ethnic extremists attempted to prevent the political participation of the Rwandan Patriotic Front, as had been agreed to in the peace accord, out of fear that they themselves would be marginalized and criminalized by the postwar government. Their fears led to the genocide that claimed the lives of more than 500,000 Rwandans.

There are two types of negotiations namely the distributive negotiation in which the parties compete over the distribution of a fixed sum of value. The key question in a distributed negotiation is "Who will claim the most value?" In distributive negotiations, a gain by one side is made at the expense of the other. Integrative negotiation is when the party cooperates to achieve maximum benefits by integrating their interests into an agreement. These deals are about creating value and claiming it.

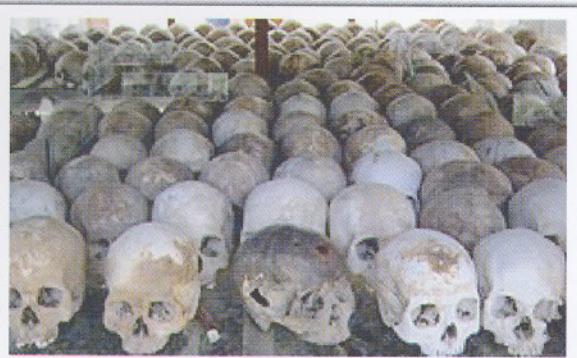


figure 1: Genocide in Cambodia by Khmer Rouge in 1975-1979

A very distinctive international negotiations that failed as both distributive negotiations benefited one party in this case the Cambodian government with the United Nations. After more than five years of negotiations, the United Nations and Cambodia drafted an agreement in March 2003 to set up a war crimes court to try the top leaders of the Khmer Rouge, who ruled Cambodia from 1975 to 1979 and are accused of causing the deaths of 1.7 million people through execution, starvation, disease and hard labor. In 1997, when the Cambodian government asked the United Nations to help establish a tribunal like those in Rwanda and the former Yugoslavia, both of which were created by the United Nations Security Council to try war crimes suspects. In 1999, a UN group of experts called for an international tribunal for Cambodia, citing the Cambodian judiciary's lack of independence and failure to command public confidence. In May 2000, the United Nations and Cambodia agreed to establish a "mixed" war crimes tribunal, to include both international and Cambodian judges and prosecutors. In 2001, the Cambodian government passed a new law establishing "Extraordinary Chambers" in the Cambodian court system to prosecute the former Khmer Rouge leaders. In early 2002, the United Nations withdrew from negotiations with Cambodia after U.N. Secretary General Kofi Annan concluded that Prime Minister Hun Sen was not committed to the establishment of an impartial court with the independence to pursue war criminals. But in December 2002 the United Nations General Assembly adopted a resolution, sponsored by France and Japan and supported by Cambodia and the United States, urging the Secretary General to reconsider. Cambodia and the United Nations returned to the negotiating table and arrived at their latest agreement in March, in which the Cambodian court system's Extraordinary Chambers would have jurisdiction to try senior Khmer leaders for the crimes and serious violations of Cambodian Penal law, international humanitarian law and custom, and international conventions recognized by Cambodia.

MULTILATERAL NEGOTIATIONS

Multilateral negotiations can be understood through the metaphor of coalitions, deliberately

constructed networks of actors having differing interests or values, priorities and goals, yet showing general or limited common objectives. Coalition building highlights the commonality of interests among parties and reduces the complexity of multilateral transactions, thus offering a powerful parallel to international negotiation processes. In coalitions, as in multilateral negotiations in general, members assume certain roles that may drive or defend the process, exercise differentiated behaviors to manage power struggles and mutual dependence relationships, and develop strategies that move them closer to shared goals while protecting them from destabilizing counter strategies. Minority coalitions, resembling weak negotiating parties, can still be effective actors in the process of achieving common objectives. Coalition building sheds valuable light on all types of negotiations, especially those in an international setting. Indeed, close similarities in concepts and language, variety of approaches, identification of major forms, determinants, and process and outcome variables are found in both activities.

One of the favorite negotiations methods during the Cold War was the linkage of unrelated issues. This was a rough way of forcing the counterpart to make concessions. Though the international environment has drastically changed, this method is still in use today. Modern diplomacy needs the opposite approach. Compromise requires what is called constructive parallelism in all areas of negotiation, which presupposes that progress in one area creates the opportunity for advancement in other directions. Compromise is neither a capitulation nor a sign of weakness. The art of compromise is a concession in secondary matters, not in principles. It should be noted, however, that not everything depends on the negotiators. If there is no political will even the best negotiator cannot do much.

International negotiations often happens between many countries at the same time. These may band together into economic blocs (such as the European Union) or develop shorter-term strategic alliances, such as where smaller countries band together to confront a dominant larger nation. Such collective negotiations are often as much marriages

of convenience as the joint action of true friends. Whilst international relationships are essential, each country eventually puts its own needs above the needs of others. Even when countries go to war on behalf of one another, the ultimate goal is still national at root.

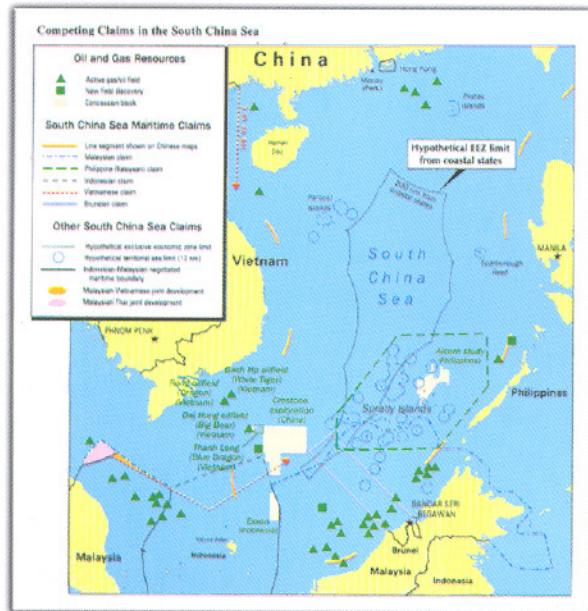


figure 2: Location of Spratly Islands at the South China Sea

The Spratly Islands of the South China Sea with approximately 44 of the 51 small islands and reefs are claimed or occupied by China, the Philippines, Vietnam, Taiwan, Malaysia and Brunei. This conflict resulting in multiparty negotiations is the result of overlapping sovereignty claims to various Spratly Islands, thought to possess substantial natural resources chiefly oil, natural gas and seafood. An aggressive China has propelled disputes, eager to meet growing energy demands that outstrip its supply capability. Overlapping claims resulted in several military incidents since 1974 and in several countries awarding foreign companies exploration rights in the same area of the South China Sea. Regional nation-states not directly involved in the Spratly disputes became concerned about regional stability and established a regional forum to discuss the peaceful resolution of the disputes. Sovereignty and exploration disputes were thought to be resolved with the drafting of ASEAN's 1992 Declaration, which committed members to resolve disputes peacefully and to consider joint exploration of the territory. Military aggression and exploration endeavors conducted by China since 1992, however, have brought into question the validity of

the 1992 joint declaration and raises the question of what long-term, peaceful solution could prevent the region from erupting into a continuum of military incidents over sovereignty rights to the natural resource-rich Spratly Islands.

CULTURE AFFECTING INTERNATIONAL NEGOTIATION STRATEGY

A big trap in negotiation lies in misunderstanding the culture of other countries, especially in the rules that they use to negotiate. Whilst one country may emphasize politeness and integrity, another might use deception and coercive methods as a norm of negotiation, whilst being polite and friendly outside of the negotiation arena.

International negotiation takes very careful notice of local cultures and customs, and is conducted with remarkable diplomacy and tact. Good international negotiators are very smooth and practiced in their art, and ensure they are extremely well informed not only about national cultures but also about the very individual perceptions of the people on the other side. The complexity and care of international negotiations may mean that the process can take an inordinately long time, quite likely months and possibly even years. Some negotiations never conclude, but the very fact that the two sides are talking is sufficient to distract them from more violent interplay.

The behaviors that negotiators from a culture characteristically use to enact a negotiation strategy are related to other features of that culture, including its values, norms for social interaction other than negotiation and ideologies. The most widely features of culture seem to be related to the variability in negotiation strategy across cultures in cultural values of individualism versus collectivism. This cultural values distinguished between cultures that place individual's needs above collective needs and cultures that place the needs of the collective above the needs of individuals. In individualist cultures, norms promote the autonomy of the individual. Social and economic institutions reward individual accomplishments. Legal institutions protect individual rights. In collectivist cultures, norms promote the interdependence of individuals by emphasizing social obligation. Social and economic institutions reward classes of people rather than individuals. Legal institutions support

collective interest above individual rights. Two researchers Geert and Shalom Schwartz have measured social values in many cultures using questionnaires and classified cultures by difference in average score described in *Table 2*.

Individualist Cultures	Intermediate Cultures	Collectivist Cultures
United States	Austria	Brazil
Australia	Israel	Turkey
Great Britain	India	Greece
Canada	Argentina	Philippines
Netherlands	Iran	Mexico
New Zealand		Portugal
Italy		Hong Kong
Belgium		Chile
Denmark		Singapore
Sweden		Thailand
France		Taiwan
Ireland		Peru
Norway		Pakistan
Switzerland		Colombia
Germany		Venezuela
Finland		Japan

Table 2 : Geert Hofstede & Shalom Schwartz

Source: G. Hofstede, *Culture's Consequences: International Differences in Work-Related Values*(Thousand Oaks, CA: Sage, 1980), p. 158

INTERNATIONAL NEGOTIATIONS IN PEACEKEEPING MISSIONS

Peacekeeping as defined by the United Nations is a way to help countries torn by conflict create conditions for sustainable peace. Peacekeepers monitor and observe peace processes in post-conflict areas and assist ex-combatants in implementing the peace agreements they may have signed. Such assistance comes in many forms, including confidence-building measures, power-sharing arrangements, electoral support, strengthening the rule of law, and economic and social development. Accordingly UN peacekeepers can include soldiers, civilian police officers and other civilian personnel.

Once a peace treaty has been negotiated, the parties involved might ask the UN for a peacekeeping force to oversee various elements of the agreed upon plan. This is often done because a group controlled by the UN is less likely to follow the interests of any one party, since it itself is controlled by many groups, namely the fifteen-member Security Council and the intentionally-diverse Secretariat. The Charter of the UN gives the UN Security Council the power and responsibility to take collective action to maintain international peace and security. For this reason, the international community usually looks to the Security Council to authorize peacekeeping operations, and the Security Council must authorize all UN peacekeeping missions. Most of these operations are established and implemented by the UN itself with troops serving under UN operational command. In these cases, peacekeepers remain members of the respective Armed Forces and do not constitute an independent "UN Army", as the UN does not have such a force. In cases where direct UN involvement is not considered appropriate or feasible, the Council authorizes regional organizations such as the North Atlantic treaty Organization (NATO), the Economic Community of West African States or coalitions of willing countries to undertake peacekeeping or peace-enforcement tasks.

International Armed Forces was first introduced in 1948 to observe cease-fires in Kashmir and Palestine whereby the UN acted as mediator and negotiator for this protracted conflict. Although not specifically mentioned in the UN Charter, the use of international forces as a buffer between warring parties pending troop withdrawals and negotiations, a practice that became known as peacekeeping was formalized in 1956 during the Suez Crisis between Egypt, Israel, France, and the United Kingdom. Although peacekeeping missions have taken many forms, they have in common the fact that they are designed to be peaceful, that they involve troops from several countries, and that the troops serve under the authority of the UN Security Council to act also as mediators and negotiators. Since 1990 UN Forces have supervised elections in many parts of the world, including Nicaragua, Eritrea and Cambodia, encouraged peace negotiations in El Salvador, Angola, and Western Sahara and distributed food in Somalia. The presence of UN troops in Yugoslavia during the violent and protracted disintegration of that country renewed

discussion about the role of UN troops in refugee resettlement.

The peacemaking aspect of the peace process thus refers to the negotiations between the warring parties, usually with the aim of achieving a cease-fire agreement. This is essentially a diplomatic effort, but it may be supported by various other efforts, such as the threat of military intervention, sanctions against all or some of the warring factions, etc. The process normally deals with establishing trust, agreeing to issues to be discussed and the format and process in which talks will unfold, getting the parties to the table, mediating the actual talks, achieving and formalizing an agreement and implementing the agreement. Although it is a diplomatic, and therefore a civilian driven process (although that civilian may be a retired officer as has been the case with some special envoys), many other disciplines should inform the process. The UN response to conflict, in its simplest form, is first to prevent conflict (preventive diplomacy); if that fails the next step is to make peace (peacemaking) by gathering all the parties around the negotiation table; if a cease-fire or an agreement is reached, the UN would often deploy a peacekeeping mission to monitor the cease-fire and to otherwise assist with the implementation of the agreement; and lastly, the UN will assist to rebuild the country with a specific focus on addressing the root causes of the conflict so as to ensure that the conflict does not re-occur again (peace building).

Peacekeeping diplomacy, as undertaken by the UN through its preventive diplomacy, peacemaking, peacekeeping and peace building response matrix, is complex due to the large number of variables at play and the ever changing circumstances that we have to deal with. It is inevitable that both the conflicts and the way we respond to them will undergo further change. The UN and other international organizations may further define its role and the terms we use today may become unpopular and may change but the need for the UN and other international organizations to undertake peacekeeping diplomacy will not. UN will continue to try to prevent conflicts, and will continue to improve our early warning systems and preventive responses. Perhaps one day, based on

improved predictions and a clearer assessment of the potential future cost of inaction, we can achieve a situation where we would be able to generate the political will to generate preventive action much earlier in the conflict cycle. They will continue to have to make peace among warring parties, and this will always mean diplomatic type of efforts shaped around dialogue, negotiations and mediation. Similarly, we will continue to have the need to deploy military, police and civilian assets to the field to monitor and facilitate cease-fires and to assist with the implementation of comprehensive peace agreements



(c) 1995 Corinne Dufka

Figure 3: Failed negotiations led to genocide in Rwanda

During the Rwanda negotiations the government of Rwanda was demanding that the United Nations conduct the post-war peacekeeping operation, while the insurgent Rwandan Patriotic Front preferred that the Organization of African Unity, which already had a small observer force in the field, maintain responsibility for the peacekeeping operation. After several days during which neither side seemed able to discuss the issue, negotiators were able to convince the two parties to refer to the hypothetical postwar peacekeepers as the "Neutral International Force" for the purposes of discussion. Once they started talking about the roles and responsibilities they agreed to the mission and mandate for the postwar peacekeeping force. Once the size, cost, and mandate of the peacekeeping force were identified, the Organization of African Unity's participants stated that the operation would be beyond the OAU's capabilities. The Rwandan Patriotic Front then agreed to the presence of a United Nations force.



Figure 4 : Negotiations between Ethiopian and Eritrean Military Observed by UN Peacekeeping Staff

Common obstacle to successful negotiation is the common refusal of the parties to come to the negotiating table. Refusal to negotiate, results from the parties' fear that they will be forced to accept unwanted compromises in the near future. Parties believe that negotiations are a waste of time and are doomed to failure. Parties to a protracted, escalated conflict will not pursue or accept a mutually beneficial agreement. A classic example is the UN Mission in Ethiopia and Eritrea (UNMEE) whereby Eritrea refused to negotiate with the Ethiopians after the later refused to comply to the Ethiopia Eritrea Border Commission (EEBC), a commission established by the UN to demarcate the borders of both nations which was the cause of a bloody war in 1998 and 2000 resulting in 100 000 people killed. Since the EEBC is final and binding declared by the United Nations, Ethiopia's refusal to accept this agreement claiming certain territories which are of historical value had been given to Eritrea.

CONCLUSION

Negotiation is a process in which one individual tries to persuade another individual to change his

or her ideas or behavior. It is the process in which at least two partners with different needs and viewpoints try to reach an agreement on matters of mutual interest. A negotiation becomes cross-cultural when the parties involved belong to different cultures and therefore do not share the same ways of thinking, feeling, and behaving. Cross-cultural negotiation is one of many specialized areas within the wider field of cross-cultural communications. By taking cross-cultural negotiation training, negotiators give themselves an advantage over competitors. Successful international negotiation requires specialized knowledge, experience and skills in international negotiations. Differing laws, customs and languages all add to the complexity of international negotiations.

There are many negotiation factors that are different and need to be handled properly, in order, to be successful in international negotiations. Negotiation team composition, styles, etiquette, ethics, customs and logistics are just a few of the negotiation factors that need to be understood and handled properly. Although multilateral negotiations are basically similar to bilateral, a number of sophisticated methods and techniques have been developed in multilateralism to cope with extensive diplomatic interactions. The United Nations has identified four major areas of action in pursuance of peace: preventive diplomacy, peacemaking, peacekeeping and peace building. Preventive diplomacy seeks to resolve disputes before violence breaks out, peacemaking and peace-keeping are required to halt conflicts and preserve peace once it is attained, and peace building is aimed at preventing the recurrence of the violent conflict. These four areas together represent the UN's comprehensive response to violent conflict and its holistic approach to peace.

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THE HUMAN DIMENSION IN NETWORK CENTRIC WARFARE

Oleh Lt Kol Amiruddin bin Ismail

It must be remembered that there is nothing more difficult to plan, more doubtful of success, not more dangerous to manage, than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones."

Machiavelli

INTRODUCTION

The military leadership has understood that the battlefield is a place of confusion, where there is abundance of information and yet paradoxically no information. Clausewitz called it the **Fog of War**. Many believe that technology, leveraging on the power of networks and sensors can lift this fog. To illustrate the power of technology as a combat force multiplier, military officers have grappled with the issue of how to deal with homeland security vis-à-vis the present danger of terrorism. There would be many challenges and one of them is about how to spot the anomalies from the mountains of information available. However, every piece of data can be knowledge and some will be critical knowledge – if you know how to exploit technology to piece together data to form the relevant pattern and connections. Every data can be a precious resource especially now, since current state of the art of technology can unlock the potential value. Using technology, to lift the Fog of War, will enable us to see more and see first, understand faster and better, thus allowing us to make superior decisions to direct the outcomes of battles.

Uncertainty of Global Landscape

We have been surprised repeatedly by the shifting and the uncertainty of the global strategic landscape. Globalization has created network

effects and is becoming more complex in nature. Local events that take place in some remote part of the globe can now have far-reaching worldwide consequences.

Since we are unable to accurately predict the future, the next best thing is to harness new Information and Communications Technologies (ICT) by which could help transform the Malaysian Armed Force (MAF). We have to create and build our Armed Forces that is flexible and adaptive; MAF that is capable of dealing with any scenario that may erupt in the future.

With a background in psychology, I tend to view Network Centric Warfare (NCW) from a perspective of its application in the human dimension. To me, NCW is not just about laying the physical networks and neither not just about connecting different people or not just about getting a combined operational situation picture. It must not be just technology driven but must incorporate the much essential element of the cognitive domain – the human dimension. NCW is about the changes in the business processes that can be realized with new technology. Somehow, let us be cautioned, that even as we introduce more information communications technologies, we would continue to stick to outdated historical processes and organization. Since we must be creative to be able to exploit the power of technology, please be in

agreeable term with me that the **transformation is not one that can be left to the system engineers and the scientists alone**. In the fast paced world of science and technology, military leaderships must be involved right in the beginning of its infancy stage and must not be left in the dark. Revolution in Military Affairs (RMA) only happens when the technological breakthroughs are fully exploited by innovations in operational concepts. In RMA, the real revolution catalyst is not so much in the adoption of technology, but the concept and ideas.

Is NCW Transformation Relevant?

Foster and Kaplan in Creative Destruction found that the life spans of companies have reduced significantly through the years. They argued that if history were used as a guide, only a third of today's major corporations would survive in the next 25 years. The incumbents of today become prisoners of their mental models and success formulas, and in the process, set themselves up for failure. Thus, it is worth remembering that success had always been a poor predictor of continued success.

Transformation - quoting Andrew Marshall, is an imperative. The best time to explore and execute transformation is when you are at the peak. Never wait to become irrelevant before looking at transformation into a force built on networks. **Explore ideas and alternatives NOW** – at a time of your own choosing, when you probably have much more resource capacity. Conduct for some amount of risk taking experiments to chart future directions. As have been argued, the business of transformation is everybody's business. The real network in NCW is the people network. People are needed to generate concepts and ideas.

Risk Taking

Network Centric Transformation could only materialize if we are willing to embark on an uncertain journey with no definite destination. It will be an expedition, which requires a compass. We may have charted our waypoints but then, still we need to constantly change course and backtrack to find the right path. We have to rely on the dreams of the future. Believed that the destination would be worthwhile and have faith in the abilities to arrive.

Investment in Network Centric Transformation does not guarantee 100% capital-guaranteed funds. Risk-adversity does not bring about phenomenal returns. Unfortunately, risk-adversity is stifling creativity. Thus, if seeking innovative solution for NCW transformations, be bold and willing to take risks.

One key reason for organizational failure to transform is a rigid mental model. An organization must be prepared to dissect its mental models and to examine it on whether they are still relevant. Sacred cows must be slain if they are impediments. If leaders of an organization have stomach for the slain cow, then that organization runs the risk of ending up in the graveyard of 'has-been great' corporation.

Playing the Devil's Advocate

Thomas P.M. Barnett a professor of the U.S. Naval War College argues convincingly of what could happen on having too much dependency on NCW in his article The Seven Deadly Sins of NCW. Threading on his thought provoking analysis, allow us to take heed on the complexities of the buildup of NCW.

Presently, the MAF is on a pathway of embarking on its NCW fact-gathering mission. Interested parties have come forward to promote their ideas and visions of developing NCW. But before being impressed by them, do allow me to share facts that had not been addressed by most vendors based on the report by Prof Barnett so that we will not commit the same mistakes as that had happened in previous NCW adventure.

Lust. If absence makes the heart grow fonder, NCW is in for a lot of heartbreak, as I doubt that the MAF will ever encounter with the enemy of our grand assumptions. Unlike the US whose current spending on its Information Technology is much more than a couple of other great powers spend on their entire militaries, the MAF in comparison is a pittance. Meanwhile, with the US experiencing an unprecedented advantage in technology, MAF, as its ally would fret about trying to keep up, wondering the days when we won't be able even to communicate with the U.S. If NCW demands the tremendous pre-conflict investments in data

processing, then the future of coalition warfare looks bleak. Not only will the MAF will have little to contribute, we might even would not be able to track the course of the conversation.

Sloth. Military Operations Other Than War (MOOTWs) are the closest future we might be facing right now, and NCW does not yet answer the mail. Beyond the affordability issue, there is a larger question of what "networked" should mean to us: Wiring-up among ourselves? Or wiring ourselves up more to the world outside?

From a crystal ball prediction, I can see a future in which the establishment of an information networks is crucial to internal crises, where confusion, complexity, and chaos are the norm. There upon, the MAF are likely to be called on to be deliverers of clarity and context. Just as the MAF has the ability to talk among ourselves during the generation and coordination of large-scale violence, MAF must also have the ability to generate and coordinate the conversation of many outsiders in the prevention of small-scale violence. Correctly focused, NCW would allow the MAF to come into any crisis situation and establish an information umbrella to boost the transparency of everyone's actions. Incorrectly focused, it might hamstring us along the lines of the Vietnam War.

ANGER. The assumption concerning speed of command seems to be that because we receive and process data faster, we have to act on it faster. This virtuous circle can turn vicious rather quickly if commanders allow themselves to become slaves to their own computers, which essentially are dumb machines that count incredibly fast. Rushing to bad judgment is the danger. We always are talking about potential enemies with less advanced information technology architectures, so the potential for miscommunication and misperception is huge. We may find ourselves acting so rapidly within our enemy's decision loop that we largely are prompting and responding to our own signals. In short, we could end up like Pavlov's dog, ringing his own bell and wondering why he's salivating so much.

The networked organization's great advantage is that the processing and distribution of data are sped up considerably. What this should translate into is increased time for analysis and contemplation

of appropriate response. The goal is not to shorten our decision-making loop, but to lengthen it, and, by doing so, improve it.

Pride. Ever since Giulio Douhet's *Command of the Air* (1921), we have heard that massed effects against an enemy's center of gravity can lead swiftly to bloodless victory. And every war since then has seen this theory's vigorous application. The notion persists and now finds new life in network-centric strategy. Whether NCW's proponents admit it or not, what lies at the core of this strategy is the spurious notion that punishment equals control.

First, one man's information warfare is another man's international terrorism. . If any hostile power tried even a smidgen of what we propose to do en masse via NCW, we would be hurling all sorts of war crimes accusations. The collateral damage associated with this information technology decapitation strategy is simply too complex to control from a far. Who dies? Society's weakest and most vulnerable. We need to own up to the reality that such massed effects are closer to weapons of mass destruction than we care to admit. Second, our mastery of our enemy's complexity will translate into a capacity to steer his actions down one path or another, despite the fact that NCW's game plan includes large amounts of irreversible impact. What we may well end up with is a "dialogue of the deaf" that precludes effective communication with the other side concerning conflict resolution or more important - avoidance of unnecessary escalation. And when that happens, we may wonder which side really had its pathways locked out

Gluttony. The term "common operating picture" is apt for network-centric's vision of all players at all levels working off the same mental model. Without doubt the computer-mediated visual presentations will shape much of the commander's perception of operational realities. That, in itself, is not new. What is new is the potential for all participants to be flooded with data masquerading as information because it has been slickly packaged within the common operating picture. The danger lies in the picture collapsing all participants' perceptions of what is tactical versus operational versus strategic. By doing so, it creates an incentive for all to engage in information overload to maintain their bearings in this overly ambitious big picture. In sum, there

should be concern that the push for speed of command and self-synchronization will drive all participants to an over-reliance on the common operating picture as a shared reality that is neither shared nor real.

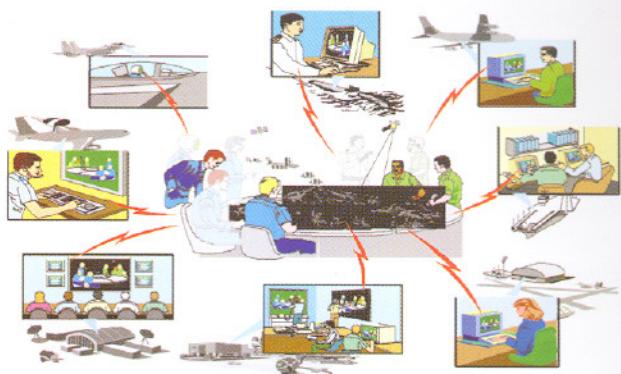
The common operating picture cannot really be shared in the sense that ownership will remain a top-down affair. What is scary about NCW's ambition is the strain it may put on commanders at various levels to integrate the commander's intent from all other commanders and not just up the chain of command. NCW promises to flatten hierarchies, but the grave nature of military operations may push too many commanders into becoming control freaks, fed by an almost unlimited data flow. In the end, the quest for sharing may prove more disintegrating than integrating.

The infusion of information technology into hierarchical organizations reduces the traditional asymmetries of information that define superior-subordinate relationships. Taken in this light, the common operating picture is an attempt by military leaders to retain the command prerogative - a sort of nonstop internal spin of control by commanders on what is necessarily a constantly breaking story among all participants, given their access to information that previously remained under the near-exclusive purview of superior officers. That poses the question of the common operating picture's "realness," for it suggests that the picture will be less a raw representation of operational reality than a command-manipulated virtual reality. At worst, we envisage that the command staff is engaging in a heavy-handed enforcement of commander's intent, all in the name of shaping and protecting the common operating picture.

Singapore Armed Forces as a model

In undertaking NCW initiatives, The MAF could somewhat emulate the Singapore Armed Force's (SAF) transformation plans. Singapore's Transformation journey as argued by BG Jimmy Khoo in his book Network Centric Warfare for Dummies gives due consideration to such factors as discussed below in ensuring the successful implementation of their goals:

Figure 1: Opportunity : Reducing the "Fog of War"



1. Resources. There has been a tendency for decision-makers to divert resources to meet immediate problems, at the expense of the future. SAF has adopted a portfolio to managing resources. Resources meant for activities with longer term returns are strictly safeguarded. Some defense budget is reserved solely for R&D, some for experimentation activities and a certain percentage fixed for IT.

2. Technology Education. The SAF increases the technology content in all their courses specifically for the Command and Staff Course, a new 6-month diploma program conducted by the university and the US Navy's Postgraduate School. In partnership with the Defense Industries, they offer a masters program in technology. On creating broad-based **innovative culture**, they have initiated efforts to create greater intellectual space. An organizational learning initiative called the Learning SAF and knowledge management infrastructure is being rolled out. On the supply side, they have corporatised the technology agencies so that they can compete freely in the market for talent to recruit the best.

3. Future Systems Directorate (FSD). SAF has also created the Future Systems Directorate, with the responsibility to explore, seed and grow high pay-off concepts whose mission is to be the catalyst for transformation. FSD looks at things from different perspective. Just like an oyster, when a speck of sand is inserted, it irritates the oyster and it secretes its body fluids to get rid of it, which form the pearl. One of FSD's roles is to be that speck of sand responsible for irritating the system, create lots of pearls. For this, they have a bunch of creative, fun-loving officers.

FSD drives the experimentation activities and it owns the experimentation budget. One key concept that they have been working on is their concept of NCW called integrated Knowledge Based Command and Control (IKC2). To realize IKC2, they have been researching, and amongst them are:

Building network architecture.

Building enterprise level web services.

Exploring agent based learning and fusing with robots. (Artificial Intelligence).

Exploring data fusion architectures, such as the distributed fusion system for sensor. The data fusion algorithm enables each sensor to receive information even when it cannot detect the targets. Building an automated data mining and analysis engine to deal with massive amounts of unstructured data such as the huge amounts of information from the Internet.

Playing with UAVs.

One of the greatest benefits from NCW is that we could have a much leaner force with the same or increased capability. There are many experiments being conducted around the world to determine the force multiplying capabilities related to NCW. The SAF experimented with the Australian forces to sought answer as to how much better a brigade can be if it were equipped with a suite of IKC2 capabilities. Some of the tools used are:

Visualization tools to see the terrain to create superior appreciation of the ground.

Mobility devices like PDAs that enabled more ground commanders to have improved situation picture and information.

Blue force trackers.

Use of recognition decision-making methodologies to appreciate the battlefield.

Collaboration tools including Voice over IP technologies.

Procurement

SAF investments in new capabilities go through stringent assessments of requirements in relation to their missions and war-fighting strategies. The selection of a new fighter replacement is a case in point. It is a program, which is being watched closely by the aerospace industry. As Financial Times said in an article, much of the intensity is due to Singapore's reputation as "a reference customer" one of the handful of countries that carry weight because of the stringent and transparency of their procurement process. When the SAF buy weapons, they look at them; their engineers do so very contentiously and with a keen eye to cost-effectiveness to make sure they make the most of their defence dollars. To ensure that they get the most cost-effective systems, they undertake creative sourcing, strategic cost reviews and cost audits.

CONCLUSION

I seek not to praise network-centric warfare, nor to bury it. I believe it is imperative upon the MAF to think that innovation is an important element toward force modernization. The MAF needs to nurture an environment and culture that constantly innovates. MAF also needs to nurture an environment and culture that does not insist on formulating plans to fight tomorrow's war with yesterday's concept. NCW is the in-thing in a combat multiplier. Everybody who is serious about building up an edge in their armed forces must strive to understand and implement it. Ignore it at your own peril. Transforming armed forces into one that fully exploits networks is tough and I suspect that not all armed forces embarking on such efforts will succeed. It is a difficult journey. The military leadership in the MAF needs to be inherently paranoid. This paranoia will ensure that Malaysia will prosper against many odds.

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PENGURUSAN PERUBAHAN DALAM ORGANISASI

Oleh : Mej Mazlan bin Husin

PENGENALAN

Kehidupan manusia kini tidak dapat lari dari organisasi dan sehingga dari mula bayi dilahirkan hingga mereka mati diselenggarakan oleh organisasi. Hakikat ini membuktikan betapa pentingnya peranan organisasi kepada kehidupan manusia. Kehidupan manusia yang bertamadun dan sehingga kini lebih moden, menyebabkan manusia lebih menekankan keberkesanannya, prestasi dan menilai pengurusan organisasi secara lebih kritikal dan mencabar. Maka perlulah kepada suatu konsep pengurusan yang berkesan bagi memenuhi hasrat individu dan kumpulan tertentu.

Takrif organisasi mengikut Profesor Schein, adalah satu penyelaras yang rasional terhadap aktiviti manusia untuk mencapai sesuatu matlamat melalui pembahagian buruh, fungsi dan juga melalui hirarki berautoriti dan tanggungjawab. Menurut Ralph Davis, organisasi sebagai satu kumpulan manusia yang sama-sama bekerja di bawah seorang ketua atau pemimpin untuk mencapai sesuatu objektif. Stephen Robins pula mengatakan organisasi adalah satu aktiviti kolektif yang dirancang oleh dua orang atau lebih dengan merencanakan satu pembahagian buruh dan autoriti berhirarki untuk mencapai sesuatu matlamat bersama.

Dalam konteks pengertian organisasi moden, organisasi bolehlah ditakrifkan sebagai satu sistem pelbagai aktiviti manusia seperti sumber semula jadi, modal, bahan dan pendapat yang diselaraskan sebagai satu penyelesaian untuk memenuhi keperluan manusia dalam interaksi mereka dengan lain-lain sistem aktiviti manusia dan persekitarannya.

Berdasarkan sejarah, organisasi amatlah penting kepada kehidupan manusia dan telah wujud sekian lama lagi. Terdapat beberapa contoh penubuhan organisasi untuk kerajaan lama purba seperti Sumerian, Mesir, Babylonian, Greek, China dan Rom. Di zaman kerajaan Sumerian iaitu 3000 SM, para paderi telah mewujudkan peraturan pengurusan bagi merekodkan urusan perniagaan. Pembinaan piramid semasa kerajaan Firaun Mesir juga adalah menunjukkan betapa pentingnya pengurusan kerajaan dan rakyat. Seramai 10000 pekerja telah terlibat dan memakan masa hampir 20 tahun untuk disiapkan piramid tersebut. Kerajaan Babylonian pula memperkenalkan sistem pengurusan harta berdasarkan peraturan dan undang-undang kod Hammurabi yang meliputi harta-harta persendirian, tanah dan jual beli. Ia diasangkan mengikut kod-kod.

Aristotle semasa kerajaan Greek pula menekankan pentingnya pemusatan kuasa('centralised') dan pemecahan kuasa('decentralised') di dalam menguruskan kerja di dalam organisasi. Semasa pemerintahan kerajaan Rom pula, satu sumbangan pengurusan yang berkesan telah diperkenalkan iaitu sistem empayar pemerintahan telah dipecahkan mengikut daerah-daerah dan setiap daerah ditadbirkan oleh Gabenor. Gabenor-Gabenor yang dilantik akan mendapat arahan dan diberi kuasa oleh Raja Rom. Ini berlaku semasa pemerintahan Diocletian. Machiavelli telah memperkembangkan konsep ini dengan memperkenalkan konsep rakyat sebagai pembantu kepada raja. Ini berlaku dengan setiap keputusan yang dibuat mestilah selaras dan mendapat persetujuan rakyat. Selain itu pemimpin mestilah memberi ganjaran kepada rakyat yang berjaya. Manakala strategi pengurusan perang oleh

Sun Tzu dari negara China pula amatlah terkenal sehingga ke hari ini. Ini termasuklah strategi dan taktik perang yang digunakan.

Isu-isu pengurusan di alaf baru pula banyak membincangkan tentang mengubah budaya organisasi, melaksanakan pengurusan kualiti menyeluruh, penyelarasan semula (reengineering), menguruskan "downsizing" dan mengendalikan tekanan pekerja. Perubahan perlu dilakukan berdasarkan tekanan persekitaran dan dalam organisasi masa kini dan akan datang.

TUJUAN

Tujuan artikel adalah untuk menerangkan aspek pengurusan perubahan dalam sesebuah organisasi dan implikasinya kepada organisasi tersebut.

MENGUBAH BUDAYA ORGANISASI

Untuk mengubah budaya organisasi ianya memerlukan masa yang panjang dan antara strategi yang boleh diubah oleh pengurus adalah seperti berikut:

a. Memahami faktor situasi. Situasi semasa organisasi perlulah dikenal pasti oleh agen perubahan atau sebaliknya. Perubahan budaya perlu di masa-masa berikut:

(1) Wujud krisis yang dramatik. Krisis yang dimaksudkan di sini boleh wujud dalam bentuk timbulnya masalah kewangan, kehilangan pelanggan utama dan pesaing yang membuat inovasi teknologi yang mendadak.

(2) Kepimpinan bertukar. Sering kali apabila kepimpinan organisasi bertukar, maka terdapat perubahan kepada budaya atau cara bekerja.

(3) Organisasi yang baru dan kecil. Organisasi yang baru ditubuhkan dan bersaiz kecil, tahap budaya adalah lemah. Pihak pengurusan akan lebih senang untuk membudayakan organisasi tersebut mengikut hala tujuanya.

(4) Budaya lemah. Budaya yang lemah agak senang untuk diubah berbanding dengan budaya yang kuat dan telah sebat dengan pekerja-pekerja di dalam organisasi tersebut.

b. Bagaimana perubahan budaya akan tercapai. Perubahan budaya akan tercapai apabila ianya mengikut langkah-langkah berikut:

(1) Menjalankan analisis budaya untuk menentukan elemen budaya yang memerlukan perubahan.

(2) Melantik kepemimpinan baru dengan wawasan terbaru.

(3) Memperkenalkan cerita baru dan adat untuk menyampaikan wawasan baru.

(4) Mengubah proses sosialisasi, cara pemilihan pekerja, penilaian prestasi dan sistem ganjaran untuk menyokong nilai-nilai yang baru.

KEJURUTERAAN SEMULA ('REENGINEERING').

Rekayasa semula memberikan garis panduan permulaan untuk berubah. Ianya menyediakan rangka kerja untuk melakukan perubahan. Organisasi yang telah bersetuju untuk melakukan kejuruteraan semula perlulah melihat terlebih dahulu cara individu bekerja dan berinteraksi dalam organisasi. Perubahan akan berlaku secara radikal tentang cara organisasi melaksanakan tugas.

MENGURUS DALAM PERSEKITARAN KERJA 'DOWNSIZING'

'Downsizing' bermaksud memperkecilkan saiz organisasi, di mana tenaga kerja yang terdapat di dalam organisasi akan melakukan pelbagai tugas dalam satu masa. Ini merupakan satu strategi perubahan struktur organisasi yang semakin kerap berlaku dewasa ini. Perubahan ini dibuat kerana tekanan persaingan, ekonomi, teknologi, undang-undang dan globalisasi. Persekitaran kerja yang timbul kesan 'downsizing' ini adalah

kesan mendalam di tempat kerja dan kehidupan pekerja seperti menghadapi tekanan, kekecewaan, kebimbangan dan marah.

Agen perubahan sepatutnya memberikan sokongan kepada pekerja yang akan diberhentikan. Saluran komunikasi yang terbuka dan jujur perlu diberikan kepada mereka bagi menerangkan situasi semasa dan mengapa organisasi perlu melakukan sedemikian. Ganjaran dan faedah tertentu perlu diberikan mengikut undang-undang buruh di sesebuah negara. Terdapat organisasi yang menyediakan bantuan perkhidmatan mencari kerja lain sebagai ganti untuk pekerja yang diberhentikan. Bagi mereka yang masih kekal di dalam organisasi, 'Downsizing' juga memberikan tekanan kepada mereka. Tanggungjawab mereka semakin besar kerana keperluan kerja adalah sama tetapi bilangan pekerja adalah semakin berkurang. Bagi mengurangkan kebimbangan dan ketakutan di kalangan pekerja, perlu diadakan saluran komunikasi dan perkhidmatan kaunseling yang cekap dan berkesan.

INOVASI

Organisasi yang ingin berjaya perlulah mewujudkan keluaran atau perkhidmatan baru yang bersesuaian dengan teknologi tercanggih, bagi menghadapi persekitaran yang dinamik dan persaingan global yang kompetitif. Perlu diterangkan maksud kreativiti dan inovasi di dalam mencapai maksud inovasi ini. Kreativiti bermaksud, keupayaan untuk menggabungkan idea di dalam cara yang unik atau mengaitkan di antara idea-idea. Organisasi yang merangsang kreativiti membangunkan pendekatan untuk melakukan kerja atau penyelesaian yang unik kepada masalah. Bagi makna inovasi, ini bermaksud proses untuk menjayakan idea yang kreatif dan menukarkannya dalam bentuk keluaran, perkhidmatan dan kaedah operasi yang berguna. Justeru itu organisasi yang inovatif adalah organisasi yang mempunyai keupayaan untuk menyalurkan kreativiti kepada hasil yang berguna. Apabila pengurus ingin mengubah organisasi untuk menjadikan lebih kreatif, ini membawa maksud mereka mahu merangsang inovasi. Inovasi dilaksanakan melalui sistem berikut:



Bagi mendapatkan hasil yang diinginkan iaitu keluaran yang kreatif, kita perlu melihat kepada input dan proses pertukaran input tersebut. Input termasuklah individu dan kumpulan yang kreatif di dalam sesebuah organisasi. Tetapi dengan mempunyai individu atau kumpulan yang kreatif adalah tidak mencukupi jika persekitaran tempat kerja yang tidak merangsang kepada kreativiti tersebut. Terdapat tiga boleh ubah yang dapat merangsang inovasi iaitu struktur, budaya dan amalan sumber manusia.

a. Pemboleh ubah struktur. Tiga perkara yang boleh memberi kesan ke atas pemboleh ubah struktur terhadap inovasi. Pertamanya adalah struktur organik secara positif mempengaruhi inovasi. Memandangkan organisasi yang mempunyai struktur sedemikian adalah terlalu lemah dalam formalisasi, pemasukan dan pengkhususan kerja, maka struktur organik membantu kelenturan dan kesesuaian bagi melaksanakan inovasi. Keduanya adalah ketersediaan sumber yang berlebihan akan menyebabkan organisasi dapat membeli inovasi, mampu menanggung kos untuk memperkenalkan inovasi dan dapat menyerap segala kerugian. Akhirnya, kekerapan komunikasi antara unit membantu untuk mengatasi halangan kepada inovasi. Pasukan dan tenaga kerja yang mempunyai fungsi berkait, dapat membantu interaksi di antara jabatan dan digunakan dengan meluas di dalam organisasi yang inovatif.

b. Pemboleh ubah budaya. Organisasi yang inovatif biasanya mempunyai budaya yang seakan-akan sama. Organisasi ini menggalakkan kaji selidik, memberi ganjaran pada kejayaan dan

kegagalan, dan menggalakkan kesilapan. Budaya yang inovatif biasanya mempunyai ciri-ciri seperti berikut:

- (1) Toleransi terhadap tindakan yang tidak praktikal. Ada kalanya individu yang memberikan sesuatu yang tidak praktikal pada awalnya, tetapi akhirnya akan membawa kepada suatu penyelesaian praktikal.
 - (2) Penerimaan kekaburuan. Penekanan yang banyak kepada objektiviti dan pengkhususan akan menyekat kreativiti.
 - (3) Kawalan dalaman yang rendah. Peraturan, undang-undang, polisi dan kawalan dalam organisasi perlu diminimumkan.
 - (4) Toleransi terhadap konflik. Pandangan yang pelbagai adalah digalakkan. Perhubungan yang harmoni dan kesefahaman antara individu dan unit kerja adalah diandaikan tidak membawa kepada prestasi yang tinggi.
 - (5) Tumpuan sehingga ke akhir. Ini akan menjadikan hasil yang terbaik untuk penyelesaian kepada sesuatu masalah.
 - (6) Fokus sistem terbuka. Organisasi mengawal persekitaran dan bertindak balas dengan cekap di atas segala perubahan yang wujud.
- c. Pboleh ubah sumber manusia. Organisasi yang inovatif secara aktifnya akan memperkenalkan latihan dan pembangunan kepada setiap ahli supaya pengetahuan mereka sentiasa tinggi, menawarkan pekerja keselamatan kerja yang tinggi untuk mengurangkan ketakutan dimarahi kerana melakukan kesilapan dan menggalakkan individu untuk menjadi juara dalam perubahan. Individu yang secara aktif menyokong idea baru, membentuk sokongan, mengatasi halangan dan memastikan inovasi dijayakan dipanggil juara idea.

KESIMPULAN

Pengurusan perubahan merupakan aspek terpenting yang perlu diberi perhatian dalam menghadapi cabaran pengurusan alaf baru. Walaupun ini merupakan perkara yang ingin dielakkan oleh setiap individu, namun perubahan perlu dilaksanakan oleh organisasi. Ini adalah disebabkan oleh tekanan yang berlaku di persekitaran dan dalaman organisasi pada masa kini dan akan datang pastinya memaksa organisasi untuk berubah. Walaupun pelaksanaannya mendapat tantangan namun organisasi perlulah bersedia dan sekarang untuk menghadapi perubahan. Salah satu cara yang boleh dilakukan adalah melalui pembelajaran. Kanter, dalam bukunya, "The Challenge of The Organizational Change", (1992), menekankan pelaksanaan pengurusan perubahan perlulah selari dengan peningkatan kadar keintelektualan individu dalam organisasi. Ini dapat dicapai melalui program latihan dan pembangunan yang akan mencetuskan nilai kematangan individu dalam menerima perubahan.

Sebagai pekerja dalam sesebuah organisasi, mereka perlulah menerima pembelajaran melalui program pembangunan sumber manusia agar dapat membantu diri dan organisasi untuk berubah. Peranan pekerja dalam pengurusan perubahan amatlah diharapkan kerana kejayaan atau kegagalan sesuatu perubahan bergantung kepada penerimaan mereka. Melalui implementasi yang baik dari pihak pengurusan dalam melaksanakan perubahan dan sentiasa peka pada persekitaran yang sentiasa berubah, akan menyebabkan individu menerima perubahan sebagai cara hidup organisasi.

Seseorang pengurus yang merupakan salah seorang agen perubahan perlulah mempunyai strategi pelaksanaan pengurusan perubahan yang baik. Ini adalah untuk memastikan organisasi mempunyai daya saing dan mampu bertahan di pasaran. Jika seseorang pengurus tidak dapat menguruskan perubahan dengan baik, walaupun ini berjaya diimplementasikan, namun ini akan menyukarkan perubahan yang ingin dibawa seterusnya.

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Learning Organization Concept, Issues and Concern: Transforming Ministry of Defences into Learning Organization

By Mej Mohd Roziman bin Zainal

Abstract:

The aim of this article is to explore the fundamentals of learning organization such as the definition, concept, characteristics, the benefits and the issues of learning organization. The article discusses why an organization should change into a learning organization. Discussions include the steps to take into considerations on how a government organization can become a learning organization. The paper also looks into the significance of transforming Ministry of Defense (MINDEF) into a learning organization and explains how the concept of learning organization is relevant and suitable to MINDEF.

INTRODUCTION

Successful organizations know that to survive in the new millennium, they have to constantly strive for excellence, search for new knowledge and build their capacity to learn and stay ahead of change. Such organizations too have managed to adopt a learning approach to improve quality and be ahead of their rivals in providing higher quality products and services to their customers. Clearly, a new perspective in organizations is emerging, which radically changes the way in which organizations should be managed, how they should function and to cope with change itself. The learning organization is viewed as a move towards this new paradigm.

There is a paradigm shift in terms of organizational development where organizations are changing from a bureaucratic organization that focused on rationality and efficiency, to a performance based organization that promises results and effectiveness. The concept of learning organization is centered on continual adoption to an ever changing environment to strive for superior performance.

Besides that, in the era of globalization, collaborative working environment is the way forward

in an organization. Work culture in organization has drastically changed. Time and space are no longer seen as obstacles. Currently, most of the routine tasks are becoming fully automated. As such, staffs are forced to focus more on complex tasks that require thinking, understanding, assimilation of knowledge and problem solving. This category of staff is called the "Knowledge Workers".

Knowledge workers are becoming an asset to an organization. They are able to convert ideas into products or processes that will benefit the organization in terms of continuous improvement or innovations. They also dare to take risks, expecting to learn from their mistakes and exploring new possibilities. Knowledge workers are continually learning and aware that knowledge has a limited shelf life. In this information revolution, "brains have become more valuable than brawns".

Therefore it is crucial that organizations create a favorable environment for their workers to work collaboratively and learn from each other, sharing ideas and knowledge to the advantage of the organization. This is where learning organization comes into place.

WHY LEARNING ORGANIZATIONS?

As new demographics, new technologies, and new global structures become the order of the day, the very nature of work, organizations, and management is undergoing fundamental change. In this new hyper-competitive environment, learning becomes the central focus where the human resource becomes the only resource around which a sustainable competitive or strategic advantage can be built. Managers need to learn ways of organizing that are less hierarchical, more democratic, and focused upon skill and knowledge development.

"The challenge for leaders in the twenty-first century will be how to release the brainpower of their organizations" (**Bennis, 1997**).

"The dominant competitive weapon of the twenty-first century will be the education and skills of the workforce" (**Thurow, 1997**).

Hamel and Prahalad (**Prahalad, 1997**) emphasize that learning and competence will be the fundamental building blocks in the creation of a strategic architecture that links the past and the present and that competitive advantage will go to those organizations that succeed in building new competencies in new opportunity areas.

"Companies will have to unlearn their past and forget it! The future will not be an extrapolation of the past" (**Prahalad, 1997**).

However, while it is widely recognized and accepted in both the private and public sectors that this trend may be inevitable, the real challenge is how to actually transform an organization into a learning organization. As one writer puts it, "The chorus asking this question is growing. People in . . . public and private sector organizations are . . . seeking the Holy Grail of learning organizations to improve their operations and their results" (**Willard, 1995**). In fact, "The public sector has changed more in the last three years than in the last 30 to 50, and the rate of change seems to be accelerating. Agencies are asking how to bring about dramatic process improvements, organization culture shifts and agency overhauls" (**Van Wart, 1994**).

What is Learning Organization?

There are several definitions of learning organization found in related articles or books. Some definitions of learning organization as extracted from several sources are:

- Learning Organization is defined as "*one in which people at all levels, individually and collectively are continually increasing their capacity to produce results they really care about*". (**Karash, 1996**)
- "*One that seeks to create its own future; that assumes learning is an ongoing and creative process for its members; and that develops, adapts, and transforms itself in response to the needs and aspirations of people, both inside and outside itself*". (**Navran Associates, 1993**)
- "*An organization that is skilled at creating, acquiring and transferring knowledge, and modifying its behavior to reflect new knowledge and insights*". (**Garvin, 1993**)
- "*A Learning Company is an organization that facilitates the learning of all its members and continually transforms itself*". (**Pedler, Burgoyne and Boydell, 1991**)
- "*Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together*". (**Senge, 1990**)

The main substance in the first four definitions is about a learning environment with members acquiring, sharing and enhancing knowledge for the benefits of the organization. However, Peter Senge, the writer of *The Fifth Discipline – The Art and Practice of The Learning Organization* (1990) has included "pattern thinking" as a part of learning organization. He elaborated that in order, to have competitive advantage, organization should learn faster than its competitors. Therefore, organization

should strategize the learning skills so as to create a more effective learning culture. Senge's frameworks for learning are founded on the following key areas or disciplines:

1. **Systems Thinking** – understanding the whole rather than just the fractional parts of organizational thinking and behavior.
2. **Personal Mastery** – a readiness to continually renew personal learning and to relate this to organizational work.
3. **Shared Vision** – related to conviction, commitment and clarity of intent that generates a need for learning and the collective will learn.
4. **Mental Models** – that assist managers to challenge their own assumptions and views of the “current reality”.
5. **Team Learning** – to encourage work groups to engage in dialogue.

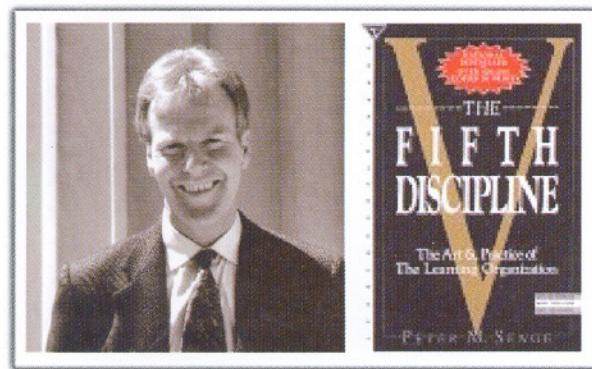


Figure 1: Peter Senge

Based from these definitions, it can be summarized that the basic meaning of learning organization is an organization that is continually expanding its capacity to create its future. As such, learning organization is an organization that creates a conducive surrounding for its members to voluntarily adapt learning as part of their working culture and their willingness to share their knowledge with other members in the organization. Apart from that, organization should also have a learning strategy so as to be more efficient. The cultivation of values such as acquiring, sharing

and diffusion of knowledge within an organization, equipped with the right strategy, can definitely shape the organization towards a productive future.

CONCEPT AND CHARACTERISTICS OF LEARNING ORGANISATION

As seen earlier, there are many ways of defining learning organization. Each writer has different perspective as to what constitutes learning organization. In essence, a learning organization is an organization that learns and encourages learning among its people. It promotes exchange of information between employees hence creating a more knowledgeable work force. This produces a very flexible organization which facilitates the acceptance and adaptation to new ideas and changes through a shared vision to reach the stated end. Learning Organization thus is an approach to organizational change and continuous improvement, the two synergistically and mutually supportive.

In order to achieve superior performance, an organization needs to shift from a managing mindset to that learning organization which emphasizes continuous improvements as the foundation. Meanwhile, performance management is the responsibility of leaders whereby the evaluation of effectiveness is determined by his/her own ability to perform the following;

- To create a conducive environment;
- To ensure that the desire competencies are developed;
- To facilitate the right mindset of always wanting to do better prevails (to continuously learn and improve)

As a means to facilitate and enhance organizational learning, employees have to be exposed and inculcated with the disciplines of organizational learning.

According to Kerka (1995), most conceptualizations of the learning organization seem to work on the assumption that “learning is valuable, continuous and most effective when shared and that every experience is an opportunity to learn. The

following characteristics appear in some form in the more popular conceptions. Learning organizations:

- Provide continuous learning opportunities.
- Use learning to reach their goals,
- Link individual performance with organizational performance.
- Foster inquiry and dialogue, making it safe for people to share openly and take risks.
- Embrace creative tension as a source of energy and renewal.
- Are continuously aware of and interact with their environment.

Meanwhile, the **Corporate Leadership Council of the United States of America (2002)** identifies the characteristics of learning organization as such:

- Exhibits top-level commitment to learning.
- Fosters continuous learning, unlearning and relearning.
- Practices workplace democracy.
- Undertakes environmental monitoring.
- Utilizes information technology as an enabling tool.
- Encourages team learning.
- Translates training and learning into practices, and
- Ties reward to performance.

BENEFITS OF LEARNING ORGANIZATION

Nowadays, human resource professionals are beginning to demonstrate great interest on the value of learning organization. It is led to believe that learning organization contributes towards the

organization's superior performance. This can be achieved through the energized and committed workforce built-up within the organization and improved qualities generated from it.

Learning organization also helps to manage changes as and when necessary. Such flexibility and adaptability will ensure the long-term success of an organization. Furthermore, it makes incremental improvements becomes a reality. It is through learning organization that successes and best practices are easily transferred and emulated into the organization.

Apart from that, implementation of learning organization increases the creativity, innovation and adaptability of new knowledge within the organization. The conducive environment of learning organization can attract people who want to succeed and learn into the organization and have no problem in retaining them within the organization. Lastly, learning organization ensures that people are equipped to meet the current and future needs of the organization.

ISSUES AND PROBLEMS

In earlier discussion of Senge and the learning organization, some particular problems associated with his conceptualization are pointed. These include a failure to fully appreciate and incorporate the imperatives that animate modern organizations; the relative sophistication of the thinking he requires of managers (and whether many in practice they are up to it); and questions around his treatment of organizational politics. It is certainly difficult to find real-life examples of learning organizations (**Kerka 1995**). There has also been a lack of critical analysis of the theoretical framework.

Based on their study of attempts to reform the Swiss Postal Service, **Finger and Burgin Brand (1999)** provide us with a useful listing of more important shortcomings of the learning organization concept. They conclude that it is not possible to transform a bureaucratic organization by learning initiatives alone. They believe that by referring to the notion of the learning organization it was possible to make change less threatening and more acceptable to participants. 'However, individual and collective

learning which has undoubtedly taken place has not really been connected to organizational change and transformation' (*ibid*: 146). Some issues related to the concept of the learning organization are:

1. Focuses mainly on the cultural dimension and not on all dimensions, and does not adequately take into account the other dimensions of an organization. To transform an organization it is necessary to attend to structures and the organization of work as well as the culture and processes.
2. Favors individual and collective learning processes at all levels of the organization, but does not connect them properly to the organization's strategic objectives. Popular models of organizational learning (such as Dixon 1994) assume such a link. It is, therefore, imperative, that the link between individual and collective learning and the organization's strategic objectives is made. This shortcoming makes a case for some form of measurement of organizational learning – so that it is possible to assess the extent to which such learning contributes or not towards strategic objectives.
3. The exact functions of organizational learning need to be more clearly defined. In our view, organizational learning is just a means in order to achieve strategic objectives. But creating a learning organization is also a goal, since the ability permanently and collectively to learn is a necessary precondition for thriving in the new context. Therefore, the capacity of an organization to learn, that is, to function like a learning organization, needs to be made more concrete and institutionalized, so that the management of such learning can be made more effective.
4. There is a need to develop a true management system of an organization's evolving learning capacity. This can be achieved through defining indicators of learning (individual and collective) and by connecting them to other indicators.

Besides of some problems and issues on the concept of learning organization, there are some generic thoughts on the existence barriers to becoming a learning organization. Its can be divided into two categories, individual barriers and organizational barriers:

1. Individual barriers
 - a. The unconscious assumption that "I know all I need to know"
 - b. Discomfort at having to give up cherished opinions or beliefs
 - c. Fear of becoming temporarily incompetent until a new skill is learned
 - d. Unlearning what has worked in the past but is no longer effective
 - e. The feeling of being too busy
 - f. Sheer mental laziness
2. Organizational barriers
 - a. Management decisions that are not to be questioned
 - b. Inability or failure to understand barriers
 - c. A blaming rather than trusting culture
 - d. An environment where questioning and/or challenging are not encouraged, or worse, actively discouraged
 - e. A "knowledge is power" syndrome that blocks the sharing of learning
 - f. The famous "Not Invented Here" syndrome
 - g. Management behavior that says "our subordinates have to learn, but not us"
 - h. Organizational silos that impede cross-functional co-operation
 - i. Lack of training time, materials and resources
 - j. Satisfaction with the status-quo

- k. Punishing mistakes rather than treating them as necessary learning experiences
- l. Failure to encourage innovation
- m. Lack of recognition for improving capabilities and contributions
- n. Lack of standardization mechanisms to capture and spread improvements as they are developed
- o. Lack of knowledge transfer or cross-fertilization mechanisms

How a Government Organization can become a Learning Organization?

The organization that is used in this paper to illustrate the transformation process is English Nature, the British government's adviser on nature and conservation. This organization was able to make significant strides towards becoming a learning organization by using a "**Six Step Approach**". An examination of their model may provide some of the initiatives that government organizations can do to embark on the journey to becoming a learning organization.

Step 1:

Get the support of relevant senior staff, especially for changes related to the wider issues of organizational management.

Senior managers can act as role models for the rest of the organization. "*This role modeling should cover an open, available, supportive, and visible management style, where mistakes can be admitted to. They will also need to be involved in learning reviews, networking, and working in a non-bureaucratic way*" (**Dolan, 1995**).

Step 2:

Introduce systems of work that bring action, review, and application of learning so closely

together that their boundaries become hard to distinguish.

For example, facilitation training is provided to help group leaders tap into the expertise of employees in order to solve problems and promote action.

Step 3:

Introduce working practices that enable staff to network freely, move between jobs, as required, and have ready access to senior staff.

Encouragement and support are given to small teams formed to explore new ways of dealing with current problems. Often these teams comprise individuals from diverse backgrounds who would not normally get together. This helps to break down hierarchical barriers and foster better working relationships with outsiders. It also gives people the confidence to learn from each other.

Step 4:

Get senior staff to network outside of the organization and report back on a regular basis.

These activities enable an organization to stay in touch with and make more significant contributions to the community, while promoting the development of allies for the future.

Step 5:

Support as much learning as possible so that staff develop the learning habit and learn to question the existing systems.

Training would be an integral part of this exercise and should be used in creative ways (**McCrombie, 1996**). For example, English Nature reviewed its rules on funding private study and decided that managers should encourage and fund training and skills development for any interested employees, even if such training had no immediate relevance to their jobs. Their goal is to develop

a habit of learning and they recognize that they cannot predict the skills that may required in the future. This is referred to by **Snow and Snell (1993)** as building in "slack" to enable an organization to respond quickly to new opportunities or unexpected changes in its strategic direction. It must be emphasized, however, that training solutions cannot by themselves bring about the learning organization. Such initiatives must be part of a larger well-integrated building a learning organization strategy that is linked to clearly delineated corporate strategic objectives.

Step Six:

Introduce new ways of learning so that a wide range of learning opportunities and options are available to meet individual needs and preferences.

For example, English Nature set up a learning centre that is updated and promoted on an ongoing basis. This centre provides a wide array of learning materials that allow employees to learn in ways and at times that they find convenient. In addition, the organization continues to offer a "dating service" to encourage mentoring and coaching and to encourage employees to take a broader view of learning.

In general, it is necessary to co-operate with partners and colleagues in other organizations by holding joint events, sharing resources, and swapping ideas.

SIGNIFICANCE OF LEARNING ORGANIZATION TO MINDEF

A learning organization is one that maximizes learning opportunities by nurturing and tapping the collective experiences of the workforce, a place where the workforce are constantly and consciously applying their knowledge in their work environment. Learning and acquiring new skills and experiences will provide organization the flexibility to cope with dynamically changing situations. The concept is also relevant and suited to MINDEF and the Armed Forces in particular for the following reasons:

- the dynamics of the environment in which the Armed Forces operate and rapidly changing geo-political developments, both regionally as well as internationally;
- the rapidly changing military technology and platforms especially in its sophistication, accuracy and firepower;
- the role of information communication technology (ICT) as an integral part of the military machine;
- the changes and developments of military warfare, doctrines, tactics and the importance of inter-operability among the various services of the Armed Forces;
- new and flexible organizational structures for a lean and trim military machine; and
- the importance of K-management in the context of the military machine, the revolution in military affairs and the development of the concept of K-soldier (the soldier for the future)

Both individuals in the Armed Forces as well as the military machine as an organization must have the ability to stay ahead of its potential adversaries (competitors) which can be only realized through training and education. The strength of every individual in the Armed Forces translates into the strength and efficacy of the total organization. Particularly important in the Armed Forces therefore are not merely the disciplines of personnel mastery or competency but also team learning and shared vision because it is only through unity of purpose that military goals are attained.

When learning is taking place at all times in the Armed Forces and the concept of learning organization is embedded in the staff and it's easier to transform. The process however is not being addressed in a holistic perspective. A more focused and deliberate approach on learning in the Armed Forces would certainly yield better results and performance. It is perhaps for these reasons that the United States Armed Forces as well as the Singapore Armed Forces have seen it prudent to

introduce the concept of learning organization into their Armed Forces in an organized and systematic way.

Meanwhile, in the context of learning organization, there are two important elements that should be taken into consideration by MINDEF and the Armed Forces in order to build the strategy to become a learning organization: Human Resources Development and Organizational Development.

1. Human Resources Development.

- a. To cluster the individual potential and the ability of the technology/machine in order to attain the organization synergy.
- b. To compress the education aspects in order to create intellectual capital.
- c. To invest the working culture towards commitment, not compliance.
- d. To compress the concept "the right man for the right job".

2. Organizational Development.

a. Organization Task.

- (1) To have a responsibility to set up the places, environment, and education opportunity to their personnel.
- (2) To train their personnel based on their expertise. When they leave the service, their expertise can be accepted by other organizations.
- (3) To assist the top management to organize the environmental changes.
- (4) To be sensitive to internal and external changes in the organization.

b. Leadership Tasks.

To compress the learning relationship with the employees by:

- (1) Give priority to the proactive compare to reactive steps.
- (2) Autonomy compared to dependence.
- (3) Flexible compared to rigidity.
- (4) Unity compared to competition.
- (5) Openness compared to closeness.
- (6) Democratic compared to autocratic.

STEPS AND STRATEGIES OF IMPLEMENTING LEARNING ORGANIZATION INTO MINDEF

The implementation of the concept of learning organization in MINDEF and the Malaysian Armed Forces needs to be carried out at various levels as follows:

1. Learning Policy.

- a. Creating the demand for learning
- b. Creating the environment for learning
- c. Ensuring the adoption of a variety of training methodologies at the Malaysian Armed Forces (MAF) institutions of higher learning.
- d. Enhancing the usage of ICT and multimedia as educational tools at all MAF institutions of learning.

2. Development of Intellectual Capital.

- a. Providing opportunities for tertiary education at of diploma, basic and post graduate degree levels through various forms of sponsorship including loan facilities.

- b. Introducing e-learning, long distance learning and after office/weekend courses through strategic alliances with institutions of higher learning.
- c. Developing competencies, multi-skill and cross-functional training based on job and trade requirements.
- d. Introducing smart learning at Royal Military College (RMC) as well as Armed Forces Apprentice Training School (AFATS).

3. Development of Community Learning

- a. K-family programme – inculcating the awareness of the importance of education and knowledge within families by Armed Forces personnel.
- b. Programme for educational excellence for children of the Armed Forces personnel through the support of certain agencies as well as through reward systems.

4. Others

- a. MINDEF has to acquire learning approach from other organizations which have already implemented learning organization (benchmarking learning from the best).
- b. To create learning organization culture awareness among top management, intermediate level and subordinates by conducting a seminars and workshops.

- c. Personnel of all levels should change their mindsets to move towards the new paradigm.
- d. To create Research and Development Department (R&D) in every service in order to monitor the transformation toward learning organization.

Conclusion

There is no quick-fix in this endeavor and organizations must customize their approaches using certain principles as guidelines. Not only is there a need for radical organizational transformation and new management paradigms in the private sector. This requirement is very much a part of the new realities of the public sector. However, there are not many examples of public sector learning organizations, which in itself may be indicative, a deeper dilemma. This is not to say that efforts are not being made in this direction by public sector organizations.

In developing a learning organization strategy, the government, must emphasize assessment of its present status, proper validation tools for measuring progress, and be an integrative system that is linked to a clear corporate strategy objective.

Ours is a time of rapid and accelerating change. To stay relevant and effective during such times, an organization must change at least as fast as its environment changes. To be innovative, the organization must change even faster and it must anticipate the future. This means it must become a “Learning Organization.”

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ARTILLERY SUPPORT IN MECHANIZED OPERATIONS

by Lt Kol Noor Sazali bin Puteh

INTRODUCTION

1. The Malaysian Mechanized Brigade was established in 1996. The objective was to equip the Malaysian Army with an effective and efficient Combined Armed unit to face any possibility of armoured or mechanized force threatening our nation. From the date of its formation, it has faced the fundamental problem of formulating a clear definition of its role in mechanized warfare in Malaysian Environment.

2. Artillery is, and always has been, a supporting arm. This fact is instilled into every member of the Royal Artillery Regiment but this seems to receive little more than lip service from those who determine our requirement. What is meant by support? What weapon and tactics are required to be given and to whom must it be given? This paper is intended to answer these questions and to highlight whether the Royal Regiment of Artillery, in its present constitution, is properly equipped and trained to fulfil its primary role in supporting the Mechanized Brigade. The paper will also show that our present weapons are unsuitable for the war we are training to fight and our basic tactical philosophy is ill matched to the requirements of mechanized warfare in Malaysian Environment in the twenty - first century.

AIM

3. The aim of this paper is to highlight the requirement of weapons for the Royal Artillery Regiment to play its role effectively to support the Mechanized Brigade.

SCOPE

4. The scope of the paper is as follows:

- a. The organization, role, tasks and characteristics of the Mechanized Brigade.
- b. Requirements of Artillery to support Mechanized Brigade.
- c. Artillery Weapons.
- d. A Suggestion Solution.
- e. Conclusion.

THE ORGANIZATION, ROLE, TASKS AND CHARACTERISTICS OF THE MECHANIZED BRIGADE

5. The Mechanized Brigade is organized to conduct operations in any part of the battlefield. The brigade combines the efforts of its battalions to perform major tactical tasks as part of a Combined Arms Division. The brigade generally consists of two mechanized infantry battalions and a tank regiment. The key element in the employment of the brigade in the conduct of the operations is its ability to synchronize battalion manoeuvres with the integrated combat support, combat service support and combat multiplier.

6. The role of the mechanized brigade is to destroy enemy in both offensive and defensive operations either independently or as part of a larger force. It must also be ready at all times to be deployed independently on other tactical operations¹.

¹ Malaysian Army Manual Land Warfare. Part Two Infantry Vol 1 Infantry. Pamphlet No2. Mechanized Brigade 1995. page 1-1.

Characteristics

7. The Mechanized Brigade has the following characteristics²:

a. **Combined Arms.** With the assistance of the signal squadron, artillery and combat service support units, the brigade can be organized such that it will enhance its ability as a combined armed force in a conventional setting.

b. **Self-Contained.** The mechanized brigade comprises manoeuvre units, combat support and service support which enable it to conduct its operations effectively that is both offensive and defensive.

c. **Armour Protection.** Armour vehicles provide limited protection to the personnel.

d. **Mobility.** With the cross-country capabilities, the mechanized brigade can be deployed rapidly into the battlefield on short notice.

e. **Firepower.** With the main armament and MGs from the tanks, IFV, APCs, fire can be delivered accurately and effectively on to enemy positions. Firepower from the mechanized brigade is suitable for the following tasks:

(1) To destroy enemy armour and hard targets.

(2) To provide close fire support to the infantry/assault force.

(3) To fire opportunity targets.

f. **Communication.** All vehicles are equipped with radio to provide communication within brigade organization and to its higher formation headquarters.

g. **Flexibility.** The conduct of operations in modern war demands a high degree of flexibility to enable prearranged plans to be altered to meet changing situations and unexpected developments. The mechanized brigade possesses reliable communication and physical mobility to enable its troops to be concentrated rapidly and tactically at decisive places and times.

h. **Logistics Supply and Administration.** Mechanized operations require a high degree of logistic supply and administration. Logistics support and administration must be planned ahead and flexible to meet rapid changing situations as well as to cover the large areas of operation.

Requirements of Artillery in the Mechanized Brigade

8. The main requirement for the Mechanized Brigade is that it should be capable of taking on and defeating the enemy with the support of the combat support units. The mechanized brigade should allow the artillery to use its own weapons with the maximum effectiveness, to concentrate its training and techniques and to eliminate the necessity for the proliferation of weapon types.

9. Under these circumstances, every arm may become a supporting arm. Infantry supports the armour when in close country or at night. The armour supports the infantry in open country. However in the Malaysian doctrine, the artillery is always the supporting arm. Therefore, the artillery needs the correct weapon to provide the right kind of support to deal with the threat of attack by massed enemy armour or mechanized troops.

ARTILLERY WEAPONS

10. In the past century, the Artillery was employed to provide covering, defensive and harassing fire to support the infantry in counter insurgency warfare in the jungle. In that setting the shell used was solely anti personnel high explosive which was designed to kill the communists under the cover of the thick jungle. Fusing problem causes this shell to

² Ibid page 1-2.

be ineffective against the dispersed enemy hiding under trees and behind the slope.

11. The present organization based on conventional warfare, where one close support regiment supports one brigade group under command of the CDA who commands the Division Artillery. The task of the CDA is to coordinate the best use of all offensive support resources within the divisional area. The CDA normally takes into consideration whether the range of the guns of the close support regiment is balanced against the frontage and depth of the division, in order to decide whether any regrouping for command will be required

12. Close Support Artillery. In the present doctrine it is documented that the close support artillery has the primary role of providing close fire support for the support arms. It is usually organic to a division, although it may be organic to an independent formation, such as an independent mechanized brigade. Close support artillery normally consists of a field regiment equipped with 105mm gun.

13. At present the Royal Artillery Regiment is armed with high explosive (HE) shells, which are projected toward the target, by field gun (105 mm Pack Howitzer) and medium gun (155 mm FH 70 and G 5). The guns are required to ensure that the shells are delivered onto their target with the necessary accuracy, with primary importance on the weapon's effect on the targets. The effects of the HE shell are as follows:

- a. 105 mm - Anti – personnel and damage to soft vehicles.
- b. 155 mm - Anti personnel and damage to soft vehicles and equipment (for damage onto the tank or APC it needs to hit them on target)

14. The list shows that only sophisticated electronics devices shell with kinetics energy³ such as Precision

Guided Ammunition (PGM)⁴ and Sensor Fused Ammunition (SFM), namely Sense and Destroy Armour (SADARM) is effective against hard mobile target presented by tank and PAC. The future war in the Southeast Asia theatre will take the form of an armoured or mechanized battle between opposing tank forces supported by self-propelled guns and infantry in armoured personnel carriers. The gunner's target will be dispersed groups of armoured vehicles probing for weak spots in our defences and once these have been found, exploiting them by the use of shock tactics with large number of the heavily armoured tanks. Unless the gunner resorts with the highly sophisticated electronics devices shell with the kinetic energy fire by medium gun, the gunner is powerless to stop this armoured thrust.

15. A brief examination of the dynamic of the future battlefield, with its rate of advance of fifty kilometres or more in a day, shows that 105mm and 155mm gun will seldom come between the ranges of the soft targets they are designed to engage. All targets ten to fifteen kilometres beyond the Forward Line of Own Troop (FLOT) as well as those within the Forward Edge of the Battle Area (FEBA) itself will be under armour. The HE shell will be ineffective in those circumstances. Though, the 155 mm gun may be able to reach back and search out any towed artillery, those enemy guns can have little effect on the outcome of the battle as they too will be powerless against main battle tanks which alone decide the issue. In the future, the remaining towed guns are likely to be replaced by Self-Propelled artillery to support mechanized operation. This has been materialized by the British Army, which equipped their Mechanized Division with SP gun⁵ AS 90 5 to play the role as Close Support Regiment.

16. The close Support Regiment equipped with SP gun is best suited to provide close fire support to Mechanized and Armoured Brigade because:

³ Kinetic Energy Ammunition. Ammunition designed to inflict damage on fortifications, armour or ship by reason kinetic energy (body in motion) upon impact. The combinations of weight and velocity often produce far more damage than the highest of explosives. Most of anti-armour weaponry now followed this principle. The Facts on Dictionary of Military Science.

⁴ Precision-Guided Munitions. The smart munitions used which the chance of hitting the target fired at is known as the Single-Shot Killed Probability (SSKP). PGMs can be Artillery Shells, Multiple Launch Rockets Systems, Short Range Ballistic Missile or Anti-Tank Rounds. The SSKP can easily be over 80 percent that one or two rounds in 10 would ever miss. The Facts on Dictionary of Military Science.

⁵ Self-propelled Gun. The gun that is able to go on its own power. A gun that has motorized vehicle as a base. The Facts on Dictionary of Military Science. Page no 5.

- a. its highly mobility commensurate with that of the support arm:
 - b. its supported troops, having armoured protection, are able to manoeuvre close to the offensive and defensive fire produced by medium guns.
 - c. its medium guns are better able to deal with the large number of hard targets often encountered in mechanized and armoured operations.
 - d. its medium guns are able to deliver the Precision Conventional Munitions which consist of a carrier projectile with HE sub-munitions or bomblet and scatterable mines munitions.
17. The HE has ceased to be relevant in the modern battle and has escaped the attention of the gunner but not the infantry and armour. Admittedly, if any 155mm shell is burst close enough to an armoured vehicle, it may damage the vehicle but how significant will the damage be? We are constantly reminded that electronic devices shell must be regarded as normal; tanks and armoured personnel carriers will therefore motor into the close down and their crews will be worried of the effect of the shell.

ARTILLERY WEAPONS IN THE FUTURE

18. It is clear that the future war will be fought under the protection of the mobile shelter in the shape of the tanks, SP weapon and APC. Soft targets will be found further and the aircraft only can reach further back from the FEBA. In a highly mobile battle, the enemy will move before effective fire can be brought onto the target. So what weapons, organization and tactics should the Malaysian Royal Artillery adopt in order to give support to others arms that is defeating these hard targets in the future war?

TECHNICAL CONSIDERATION

19. **Gun.** The close support regiment in mechanized and armoured brigade should be equipped with

155 mm SP guns. The regiment may be allocated organic to the brigade for the following reason:

- a. Towed guns are restricted to roads or well-maintained tracks. This restriction may cause problems with the control of movement and the allocation of gun positions in areas where roads and tracks are few or of limited capacity. It may also seriously limit the freedom of a mechanized or armoured commander to manoeuvre in depth, away from roads and tracks, since to do so may preclude effective artillery support.
 - b. The speed with which mechanized and armoured formations can manoeuvre means that towed guns will, on many occasions, find it difficult or impossible to keep within range of the troops they are supporting.
 - c. Deploying and redeploying towed medium guns can be very tiring for gun detachments.
 - d. Towed guns have no armoured protection. When supporting mechanized or armoured operations, there is often little time for guns to dig in. In these circumstances, towed guns are extremely vulnerable to CBF and air attack. In addition, they do not have the mobility to quickly evade attack by enemy armour when gun position is threatened.
 - e. PGM were mainly developed for use against stationary or hard moving targets especially tanks, enemy strong point and APC, and the shell can be delivered by a 155 mm gun.
20. **Forward Observers.** There are no hard and fast rules as to where the forward Observers Officers (FOO) should be in battle. A well trained FOO should know when to be alongside his combat team Commander and when to be observing. Combat Team Commander always wants the FOO to be near to him. However the FOO has tasks outside the bounds of his own combat team. He has a direct part to play in the divisional, brigade and his own combat team plan. When there is no enemy

directly in contact with his combat team, he probably has other tasks elsewhere in the battle group area such as tasks to do for his Battery Commander or even his commanding officer. Therefore the FOO frequently moves from one task to another task and does not always enjoy mutual protection of the tanks or APC operating together when he does move. But he must have the freedom to move.

21. The FOO in his APC can fit right into the pattern of armoured or mechanized tactics. The APC gives the FOO the ability to move, observe and operate in close contact with the enemy, which after all is where the targets are. He is not conspicuous in the forward area and if necessary he can fight his way out of a sticky corner.

22. **Ammunition.** At present the Royal Artillery is armed with basic weapon HE shells. As mentioned earlier, the HE shell is less relevant in the modern battle due to its ineffectiveness to inflict damage on an armoured vehicle in armoured warfare. The ICM had been developed since the early 1960s with the aim to hit the target with the first round. The shell is able to assist the artillery to engage point target with indirect fire using PGM such as Dual – Purpose Improved Conventional Munitions (DPICM) and Sense and Destroy Armour Munitions (SADARM). These types of ammunitions have a separate guidance, stabilization and control system. Some PGM are equipped with laser designation by an outside agency whereas other PGM use autonomous guidance systems to acquire and track targets. These systems rely on a target being effectively designated by millimeter wave energy, infrared energy or acoustic sensors utilizing sound emitted by the incoming PGM and reflected by the target. PGM fitted with armour piercing warheads are particularly effective against the topside of tanks and AFVs which are relatively lightly armoured. Artillery delivered PGM is undergoing continued development and should prove to be a even more effective weapon system in the future. They are becoming essential in built - up areas where low collateral damage is a factor.

23. Field Artillery Scatterable Mines are referred to as FASCAM. They include Area Denial Artillery Munitions (ADAM) and the Remote Anti-armour Mine System (RAAMS) and consist of a carrier projectile, a number of anti-personnel or anti-armour

mines and a time fuse. The mines are ejected at a predetermined height and are armed shortly after impact. If they are not detonated by enemy activity, the mine can be set to self-destruct or self-neutralise after a specific time. ADAM and RAAMS projectile were developed to provide the support arm commander at all levels with the ability to lay quick, flexible self - destruct minefields.

A SUGGESTED SOLUTION

24. The main threat to MAF in Southeast Asia region is posed by numerically superior armoured forces of the neighbouring countries and China. The Infantryman, whether on his feet or mounted in an APC has insufficient weapons to protect himself against this threat. This gives rise to a problem. The infantryman's role is to hold the ground. The ground which is necessary for the armoured vehicle to manoeuvre, provides the barrier to channel the enemy into a killing ground and provide observation. If the infantryman is static in this situation then the anti - tank defences will also be static and this may result in the main battle tank or APC being withdrawn from its correct role and being spread thinly over front where it can be destroyed by the massed enemy armour. If the main battle tank or APC is withdrawn from the static infantry position then it will hardly survive due to the less effective 81 mm round mortar on hard targets and low rate of fire of anti - tank weapon in Malaysian Army inventory. This situation becomes more difficult if a large number of armoured vehicles appear suddenly close to his position.

25. The solution lies in the Close Support Gunner abandoning his outmoded 105mm and even his 155mm gun firing the normal conventional HE shell. The guns should be supplied with PGM shell which will able to destroy enemy forces fast at comparatively short range. At the same time General Support Gunner must choose a weapon that can break up formations of armoured vehicles before they can engage our own forces. In neither case the HE shell nor PGM is likely to be chosen. This solution will free the main battle tank or APC from its present static role, so allowing it to concentrate for shock action against the enemy where it will hurt him most.

26. It is suggested that, if the gunner wishes to regain his relevance to fight the modern war and to be in a position to support the armour and mechanized brigade in our home ground, he must be able to choose the correct weapon that will destroy the hard targets presented by enemy hard mobile targets.

27. It would appear that there is a need of the SP Regiment equipped with 155mm calibre gun to support the Mechanized Brigade. The proportion in which these are required or can be afforded will depend on the total forces requiring their support and the affect they will have in freeing other arms to fulfil their own particular tasks. The SP Gun will provide equal mobility to APC and main battle tank. Most of the SP guns were designed to provide mobility, protection and communication. This mobility and protection will enhance the survivability of the gunners to continue their role to support the brigade whereas communication will increase the capability to destroy the enemy at the maximum range of the projectile (155mm shell with Extended Range Full Bore Base Bleed (ERFBB) shell can achieve a maximum range of 42 km).

28. The 155mm calibre guns are able to fire improved conventional munitions as technology advances. The aim of developing the weapon is to neutralise, suppress or destroy enemy direct fire forces or to protect friendly operations by defeating the armour of the main battle tank and APC with a high chance of a first round hit. The families of the ammunitions are Dual Purpose Improved Conventional Munitions, Sense Anti – Personal Scatterable Mines and Anti – Tank Scatterable Mine.

29. The SP guns equipped with PGM will enhance the capability of the Close Support gunners to

perform their task that is to provide fire power to defeat the enemy by achieving accuracy - destroying the enemy by first round hits. The SP guns have also provided the capacity and freedom to move in all kinds of tracks and achieve the speed required by Mechanized Brigade.

CONCLUSION

30. In the 21st century, mechanized or armour warfare will be the tactic applied by the army in the region. We should study how our neighbouring countries have strategically equipped themselves or focus to build up their forces in the future. Therefore the Malaysian Armed Forces (MAF) must always be ready to engage and defeat the enemy at all costs. The Mechanized Brigade must be sufficiently equipped with the best armour vehicles and tanks. However it must not be forgotten that the artillery that plays the vital role to provide firepower, needs to be equipped with the correct weapon. This will enable the gunner to establish the fire supremacy needed to defeat the enemy mechanized and armoured formations, and at the same time help the brigade to hold and capture the ground.

31. The correct weapon here refers to the families of ammunitions namely Dual Purpose Improved Conventional Munitions, Sense and Destroyed Armour Munitions (SADARM), Semi-active Laser Guided Projectile, Anti-Personal Scatterable Mines and Anti-Tank Scatterable Mine delivered by 155 mm SP gun and this will be the best answer to defeat the enemy hard targets. The 155 mm SP equipment with battlefield mobility equal to that of the APC and tanks firing a projectile is capable to front the armoured enemy with a high chance of a first round hit. The equipment will surely provide confidence to the Mechanized Brigade.

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