



**S. RAJARATNAM SCHOOL  
OF INTERNATIONAL STUDIES**  
A Graduate School of Nanyang Technological University

# RSIS COMMENTARIES

RSIS Commentaries are intended to provide timely and, where appropriate, policy relevant background and analysis of contemporary developments. The views of the authors are their own and do not represent the official position of the S.Rajaratnam School of International Studies, NTU. These commentaries may be reproduced electronically or in print with prior permission from RSIS. Due recognition must be given to the author or authors and RSIS. Please email: [RSISPublication@ntu.edu.sg](mailto:RSISPublication@ntu.edu.sg) or call 6790 6982 to speak to the Editor RSIS Commentaries, Yang Razali Kassim.

## **Transforming the Singapore Armed Forces: Matching technological prowess with organizational change**

Adrian W. J. Kuah and Bernard Loo

25 September 2008

*The SAF's recently unveiled Advanced Combat Man System is a potentially very useful technological application of information and networking technologies. However, without the necessary organizational and structural changes within the SAF, such technological applications will be strategically useless.*

THE Singapore Armed Forces (SAF) recently unveiled the Advanced Combat Man System for its land warriors. Comprising a head-mounted display, a weapons-targeting system, communications system, and a network-enabled portable computer, all in an 8kg package, the ACMS integrates the soldier, firepower and information and communications technology into a holistic entity. Indeed, insofar as such technologies dissolve the boundaries between hardware and humans, and reconstitute the technology-user interface in dramatic (and uncomfortable) new ways, they push society ever closer to attaining one of science fiction's holy grails – the fusion of man with machine into a cybernetic organism, or more popularly, the cyborg.

The deployment of the ACMS is the latest manifestation of the SAF's transformation into a technologically-driven third-generation fighting force. With its introduction, it is envisaged that the ACMS-enabled soldier will be wired and networked, possess superior, real-time battlespace information, and operate seamlessly with his counterparts in the air force and navy. In fact, he should be able to call down a precision air strike on targets that he has identified. Two inter-related questions emerge though: is what the individual ACMS-enabled soldier seeing in a given moment the whole picture; and, stemming from this inherent question, will he have the confidence to actually call in a precision strike on the identified target?

### **Does the Soldier See the Big Picture?**

The scenario above is based on one key assumption – that the soldier is aware of how the picture he currently sees fits into the broader perspective, that he can also be aware of the so-called 'big picture'. This is an issue that all military organizations have traditionally struggled with.

Traditionally, the commander in battle sought to adopt a higher position, away from the actual fighting. This was not cowardice. The dominant thinking was that the commander needed to gain the big picture, and not be totally consumed by the minutiae of immediate hand-to-hand fighting. To exert command and control over the ensuing shape of the battle, the commander communicated with his subordinate commanders either through the use of runners or through a flag-based semaphore-like communication system. Indeed, some military organizations still insist that commanders ought not to be at the literal forefront of the battle; rather, that the commander ought to be a distance away, precisely to enable him to see the battle in its entirety.

An alternative approach, however, one that the SAF has adopted, places the commander of a battalion at the forefront of the fighting action. The rationale behind this doctrine lies in the assumption that only then can the commander be truly effective in shaping the fight at the forward edge of the battle area. Such a doctrine still acknowledges that at some point in time, someone in the organization needs a broader perspective of the ensuing battle; and this has traditionally been the responsibility of operations staff. Simply put, somebody needs to take a step back (quite literally) so as to be able to see the entire picture, and be able to coordinate activities between widely dispersed fighting units.

The problem, if one can call it that, with such technologies as the ACMS and other similar so-called 'Blue Force Tracking' systems is that they cannot communicate the real big picture to every single soldier. Such systems rely on transponders that help users identify where each individual on one side are; these systems, however, cannot independently track where the enemy is, and rely on the user to identify and track enemy positions. However, this opens up the possibility of eight soldiers in dispersed locations identifying and tracking a single enemy position; the system may then register eight enemy positions. Perspective is important, and the problem arises when the soldier realizes this simple fact. Which brings us to our main point.

### **Organizational Change Marching in Step with Technological Change?**

The implementation of network technologies into any organization poses many problems simply because such technologies do not merely provide the organization new tools to work with; rather, they transform how the very organization itself works. Or, at least, they should.

In the military transformation stakes, technology has always been held to be the centerpiece of military innovation. However, the visible impact, even glamour, of technology on the business of war fighting often obscures other, arguably more important, aspects of transformation in the military.

Taking the ACMS as an example: it is essentially an autonomy-enabling network technology, an integral part of the move towards network-centric or cyber warfare. The attractiveness of such technologies is that it empowers the rank-and-file of the armed forces, giving autonomy to the soldier on the ground and increasing his scope for independent thinking and action. However, most military organizations are largely sanctions-based, operating largely in accordance with standard procedures. Stephen Ambrose, author of *Band of Brothers*, wrote that while the army cannot always control the things you do, it can always make you regret for doing the things you were not supposed to do.

Militaries worldwide, at varying stages of technology, remain largely conservative organizations with severe disincentives for risk-taking. Any innovation and improvisation that occur in the military tends to occur in spite of the incentive structure, not because of it. Hence, while the infantry first sergeant in the field equipped with ACMS technology might have the ability to call up an Apache gunship, the bigger question is whether he actually makes the call, or whether he does what soldiers have typically done through the ages when confronted with situations that do not conform to standard scenarios: check with his superior.

The soldier, aware that his perspective may not be the 'big picture' may choose to hesitate, for fear of calling in the wrong action and the consequences attendant thereafter. In the absence of a culture that

not only promotes risk taking and improvisation, but more importantly forgives a wrong call, there will clearly be limits to how much effective autonomy the soldier in the field actually has, technology notwithstanding.

On the broader level, the implementation of network technologies for the armed forces is a double-edged affair. Information and communications technology, if we are to believe its promise, flattens organizational hierarchy, encourages greater information sharing, and enables different teams to spontaneously form in order to deal with issues and problems as they arise. However, these very same technologies also allow organizational elites – military commanders and firm managers – micro-manage to an unprecedented degree.

Far from allowing the personnel on the ground to work with greater autonomy, these technologies allow commanders to conduct even greater surveillance on their subordinates. Paraphrasing Stephen Ambrose, the army's ability to control aberrant behaviour now matches its ability to punish it. There is, therefore, a fundamental mismatch between 21<sup>st</sup> century, autonomy-enabling technology and 17<sup>th</sup> century, sanctions-based organizational culture.

Unless and until such contradictions are resolved, or at least accepted, there will be frustration at technology's failure to deliver on its promise, or the organization's failure to effectively exploit technology, or both.

*Adrian W.J. Kuah is a doctoral candidate at the UK Defence Academy, Cranfield University and concurrently an Associate Research Fellow specializing in defence economics and organizational theory, and Bernard Loo is an Assistant Professor specializing in defence and strategic studies. They work at the Institute of Defence and Strategic Studies, the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University.*