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# RSIS COMMENTARIES

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## The (Over?) Promise of Modern Technology

By Bernard Fook Weng Loo

### Synopsis

*The tendency to seek technological solutions to strategic problems is a policy option that many states desire, but it is fraught with potential affordability questions. A new way to seek solutions to strategic problems might be necessary.*

### Commentary

TECHNOLOGY as a force multiplier is a familiar argument for states with limited strategic resources – such as manpower – to overcome. However, the lasting qualitative advantages any armed forces should seek may not come from technology.

Technology is necessarily short-lived. Five years ago, portable storage devices – so-called thumb drives – with mega-bytes of storage space were considered fairly cutting edge technologies. Then came along portable hard drives with hundreds of mega-bytes of storage space. Today, mobile storage devices contain giga-bytes of space. Technological change is accelerating and once measured by the century, is today likely to occur every year.

### Accelerating pace of technological changes

For an armed force seeking to maintain a technological advantage over its putative adversaries, the accelerating pace of technological changes means that any extant technological advantage (already naturally temporary) is increasingly short-lived. That armed force is going to spend an increasing amount of time, money and other resources looking for the next technological advantage, and the next, and so on...

Furthermore, new technologies, particularly in the military domain, are increasingly expensive. The F-35 Joint Strike Fighter is a morality-tale of modern military technology. The aircraft was initially envisaged as a low-cost and ubiquitous air combat platform. That vision of “low cost” no longer exists!

As advanced economies slow down in terms of their annual growth rates, it means that the growth of absolute amount of money that can be dedicated to military expenditure is going to slow down as well. This translates into a simple argument that increasing costs of emerging military technologies may be out-stripping economic growth rates. This means armed forces will be able to afford fewer of these new technologies.

This has been called structural disarmament, a concrete example of which is the F-15SGs that the Republic of Singapore Air Force (RSAF) acquired to replace the F-5Es. Given the costs of the F-15SG relative to the F-5E, it was impossible for the RSAF to replace the F-5Es on a one-to-one basis. Sure, new technologies (the F-

15SGs) are more capable than the ones they replace (F-5Es), but fewer platforms also means that the loss of a single platform represents a greater percentage loss of potential combat power.

By the way, while the putative adversary might right now be at a technological disadvantage, that disadvantage is going to be increasingly short-lived as the technological solution might be just around the corner.

### **The 'best' versus the 'good enough'**

The follow-on from this increasingly transient nature of technological advantage is that armed forces should be mindful of the pitfalls of relying heavily on technological advantages to help them gain a force multiplier effect. For to help them overcome other inherent strategic disadvantages, this is going to mean an ever-increasing pace of technological change in their military hardware.

Once, investment in a new weapons technology might have accrued force multiplier effects for maybe two or three decades; now, that force multiplier effect is likely to last significantly less. It means an almost-constant search for the next technological development. How can military organisations begin to approach this entire question of accelerating technological change? What are its implications for force structure decision making?

The issue can be set up as a straightforward contest between the 'best' versus the 'good enough'. One of the best analogies of this 'best' versus 'good enough' is the contrasting philosophies of tank design between Soviet Russia and Nazi Germany during the Second World War.

Few people will dispute that Nazi Germany produced probably the most technologically sophisticated tanks of the Second World War. However, as a consequence of the exacting engineering standards that went into German tank design and production, Germany had to sacrifice quantity for technological quality. In contrast, Soviet Russia produced the T-34, which although not as technologically advanced as their German counterparts, could be produced in very large numbers; in other words the Russians sacrificed quality for quantity. However, at the greatest tank battle of that war, Kursk, quantity prevailed over quality. But, to paraphrase Napoleon, enough quantity has a quality of its own.

### **Potential financial storm**

When it comes to decisions about force structures, military planners always face this question: go for the 'best' (of which only, say, 10 platforms can be afforded), or go for the 'good enough' (of which, say, 40 platforms can be afforded)? It is important to remember that the acquisition process itself incurs costs: countries do not simply go for a new technology; how that technology is acquired also has to be paid for. The shrinking shelf life of new technologies, allied to the perceived need to remain at the technological cutting edge, combine to create a potential financial storm.

Therefore, the solution for military organisations maybe to go for the 'good enough' - and to blend that 'good enough' technology with the best training you can possibly give your personnel. Military hardware is undeniably important to strategic effectiveness, BUT it is not the only determinant. Qualitative variables cannot and must not be omitted from the 'equations' we use to 'calculate' these concepts.

Most of the anecdotal evidence from Coalition operations in Afghanistan suggests very clearly that what appears to have saved thousands of Coalition soldiers was not their superior technology against their Taliban counterparts; rather, it was their superior training that mattered the most. A 'good enough' technology in the hands of a superbly trained soldier generates a combat effect far greater than a 'best' technology in the hands of a soldier who does not know what to do with it.

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