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# RSIS COMMENTARIES

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## Can the Defence Industry Still Innovate?

By Richard A. Bitzinger

### Synopsis

*Innovation in the global arms industry seems to have slowed considerably, especially when measured against the promise of the “revolution in military affairs”. This could open the door to “fast followers” such as China to catch up to the state-of-the-art in arms production.*

### Commentary

INNOVATION IS generally seen as critical, if not central, to military modernisation. Throughout history, process of innovation – that is, the process of turning ideas and invention into more effective products or services (in this case, the creation of more effective militaries) – was at the heart of gaining military superiority over a rival (or rivals). This includes the introduction of new ways of fighting (the phalanx, employed by the Greek city-states), of organisation (the *levée en masse* of the French Revolution), or of technology (the so-called “gunpowder revolution” of the 16th Century, or aviation and mechanisation in the 20th Century).

The concern here deals mainly with the last category - technological innovation - and its role in military modernisation. Although military innovation/modernisation is typically a “holistic” event, incorporating technological change with changes in organisation, doctrine, and tactics, technology is still generally the starting-point for innovation.

### Sustaining vs. Disruptive Innovation

At issue is whether the process of modern military-technological innovation is beginning to fail. That is not to say that technological innovation in the defence industry is over, but rather that it has entered a new phase in which the pace of strategic innovation – that is, dramatic and far-reaching technological change – is slowing down, or is even in the midst of a “strategic pause.” Consequently, we may be entering an era where “bumpy,” revolutionary change (i.e., spikes in creativity and innovation) within the global defence industry is giving way to a less radical but continuous process of innovation. If true, then this new process of innovation could have significant implications for the global arms industry.

In general, there are two types of innovation: disruptive and sustaining. Sustaining innovations are seen as incremental and evolutionary improvements – they simply offer new and better ways to use existing technologies.

Disruptive innovations, on the other hand, are discontinuous and destructive: they radically alter, in a very rapid and dramatic way, the manner in which one approaches doing business – in this case, the business of war. And

nowhere is the conceptual impact of disruptive innovation on warfighting more forcefully articulated than in the theory of the “revolution in military affairs” (RMA). Above all, the RMA is necessarily a process of discontinuous, disruptive, and revolutionary change, as opposed to incremental, sustaining, and evolutionary change.

### **Global Defence Industry: Failure to Innovate?**

If part of the RMA is about disruptive innovation in the defence industry, then the results have been disappointing. The past two decades are littered with the bones of unrealised “transformational” programmes, such as the US Army’s Future Combat System, the A-12 fighter-bomber (nicknamed the “Flying Dorito” for its unique design), the Zumwalt-class destroyer, and unmanned combat air vehicles (UCAVs). Even the central theme of the current information technologies-led RMA – network-centric warfare (NCW) – seems to be faltering, and the once-transformational promise of NCW now appears to have been downgraded to simply being better C4ISR. The Transformational Satellite Communications System – a key element of the US military’s force transformation programme – was eventually cancelled, while another project, the Joint Tactical Radio System, was heavily scaled back.

The European defence industry – the world’s second largest cluster for defence production, after the United States – appears to have stopped innovating altogether. There is no fifth-generation fighter currently in the works, and most cutting-edge European armaments programmes – such as the Meteor missile or the Visby-class stealth corvette – were initiated over a decade ago.

### **What’s Old is New Again?**

So where does all this leave us? In the first place, despite the transformational promise of the IT-led RMA, it would appear that more conservative types of sustaining continuous innovation are edging out more radical, disruptive innovation processes in the global arms industry. There is, of course, nothing wrong with such an approach. Continuous innovation can still produce amazing results; indeed the process of sustaining innovation may turn out to be the smarter path. Paul Bracken and others have argued that the US military has been overwhelmed by new technologies to the point that it has adversely affected the military’s capabilities.

They argue that upgrades and retrofits of existing weapons systems – in other words, sustaining innovation – can be nearly as effective (and certainly easier to absorb) as disruptive new technologies. At the same time, emphasising sustaining over disruptive innovation – particularly when viewed against the backdrop of all the heady excitement aroused by the promise of the IT-led RMA in the 1990s and 2000s – seems prosaic and uninspiring in comparison.

More critically, however, this possible “lull” in disruptive strategic innovation may provide a pause or slow-down in the global process of defence technology development that would permit latecomer innovators and “fast followers” to draw nearer to the state-of-the-art. This is particularly apropos in the case of China. China has been putting significant resources into its defence establishment, including increasing military expenditures. At the same time, should the overall process of global defence innovation slow, then China might have an opportunity to catch up. Certainly in its pursuit of a fifth-generation fighter aircraft (e.g., the J-20), it is poised to overtake Europe in this one particular area.

Overall, while China may not supplant Europe as a defence innovator, it could, within the next decade or so, at least be gaining capacities to match Europe in certain niche areas.

In any event, it is not that innovation is going away, of course, but it certainly will not be like what many promised it would back in the 1990s. The future ain’t what it used to be.

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