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Southeast Asian Approaches to Military Technology and Defense S&T

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SUMMARY

Key drivers of change in defense technology in Southeast Asia are regional insecurities and, more recently, the rise of China. Most countries in the region harbor some animosities toward each other that, while not manifesting themselves in a full-blown arms race, at least contribute to an “arms competition” within the community. This results in “tit-for-tat” arms acquisitions inconsistent with mere modernization. China’s recent actions in the South China Sea add to the regional insecurities that seem to rationalize the qualitative arms buildup for the countries involved. While the number of advanced systems remains small, these upgrades have the potential to make conflict much more devastating should it occur.

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OVERVIEW

Southeast Asia (SEA) is definitely a follower/adaptor, as opposed to an innovator—and not even a “fast follower,” at that—when it comes to defense technological developments.

While most SEA nations possess some kind of indigenous defense industry, they generally lack the domestic S&T infrastructure to engage in almost any kind of innovation when it comes to defense technology. Sources of innovation and transformation come almost entirely from outside the region; at the same time, few transformational technologies (à la the IT RMA) find their way into regional militaries—indeed, most regional armed forces are decidedly platform-centric and barely networked, if at all.

Defense labs and research, technology, and development (RT&D) institutions, if they do exist, are small and poorly funded, and most domestic defense RT&D is oriented toward taking foreign systems (if those can even be called innovations) and adapting them to regional requirements.

The one exception is Singapore, which does possess a sizable defense RT&D network. The Defense Science and Technology Agency (DSTA) is the main government body responsible for implementing defense technology plans, acquiring defense materiel, and developing the defense infrastructure for the Singaporean Armed Forces. At present, DSTA is managing the overall development of the “third-generation SAF,” particularly the implementation of the integrated knowledge-based command and control (IKC2) doctrinal concept, Singapore’s version of network-centric warfare. This includes the acquisition, development, and integration of technologies for command, control, communications, and computing (C4) with ISR systems and precision-guided weapons. Relevant fields where DSTA is currently focusing much of its effort include advanced electronics and signal processing, information systems security, advanced guidance systems, communications, electronic warfare, sensors, and unmanned vehicles.

Little is known as to DSTA’s size and budget. Its workforce probably numbers in the hundreds, if not thousands, of employees and likely comprises a number of engineers, scientists, technicians, and other types of professionals. A 2002 newspaper article stated that around four percent of Singapore’s defense budget goes to covering all military RT&D; if this figure is consistent, then the Ministry of Defense spent approximately US\$330 million on defense RT&D in 2010, out of an overall defense budget of US\$8.2 billion.

SIGNIFICANT TECHNOLOGICAL CHANGES

The areas where technological changes have been most significant and (potentially) disruptive in SEA militaries are with regard to advanced fighter aircrafts (4+ generation fighter jets), precision-strike (ASCMs and multiple-launch rocket systems with guided warheads), firepower (modern tanks), and stealth (submarines). Most of the region’s militaries remain overwhelmingly platform-centric, however, outfitted with twentieth-century “metal-based” mechanized systems. Except for Singapore, no SEA country has begun to embrace network-centric warfare (NCW). Of the rest, only a few possess more than a handful of network or info-based systems, such as Unmanned Aerial Vehicles (UAV) or modern communications systems.

For the most part, this technological change is evolutionary. Even Singapore’s 3G/IKC2 efforts are gradual and piecemeal. Most SEA militaries remain decidedly behind the times in terms of their organization and table of equipment, that is, platform-centric and mechanized (if they are even that lucky). The regional rearmament that has occurred over the past ten to fifteen years is for most a process of recapitalizing their armed forces after a long period of modest arms acquisitions. Even the acquisition of so-called “modern” military equipment (4+ generation fighter jets, submarines, armored vehicles, surface combatants) has been gradual, generally in small quantities, and far behind the curve, when compared to the rest of Asia.

A TECHNOLOGICAL ARMS RACE?

Not really an arms race per se, but rather—within the region—there is an arms competition, or “arms dynamic” (à la Buzan and Herring). While an arms competition is still a process of reciprocal arms acquisitions, it is dedicated to maintaining the status quo, rather than seeking dominance. In other words, within Southeast Asia these purchases are intended more to preserve the balance of power in the region, not disrupt it.

With regards to “catching up” with the larger powers in the Asia-Pacific, while many SEA countries may be matching China, India, and other regional great powers in terms of the quality of their systems, they cannot hope to match them in terms of quantity. Even then, these countries are mainly playing “catch-up” and with the possible exception of Singapore and its IKC2 network, they will never drive any Asia-wide defense technological competition. Consequently, their present arming process does little to affect the balance of power overall in the Asia-Pacific.

The present military build-up in Southeast Asia is at least partly a reaction to growing Chinese assertiveness in the South China Sea; that is, a limited effort to balance against China militarily. At the same time, most of these states bandwagon with Beijing diplomatically and economically. However, most SEA states still seek to involve the U.S. militarily, politically, and diplomatically in their region to serve as the main counter to Chinese expansionism.

EFFECTS ON THE REGION'S MILITARY BALANCE

Whether the current military build-up in Southeast Asia is an arms race or an arms competition, it is undeniable that these countries are engaged in something far beyond the “mere” modernization of their armed forces. Even if in relatively small numbers, they have over the past decade or so added many capabilities that they did not possess earlier, including stand-off precision-strike, long-range airborne and undersea attack, stealth, mobility and expeditionary warfare, and, above all, new capacities when it comes to greatly improved command, control, communications, computing, intelligence, surveillance and reconnaissance (C4ISR) networks.

At the very least, these new types of armaments promise to significantly upgrade and modernize the manner of war fighting in the region. Certainly, many Southeast Asian militaries, to one degree or another, are acquiring greater lethality and accuracy at greater ranges, improved battlefield knowledge, command and control, and increased operational manoeuver and speed. Modern fighter aircraft and main battle tanks, ASCMs, multiple rocket launchers and stand-off precision-guided weapons (PGMs), and active radar-guided air-to-air missiles have, at least in theory, greatly increased the combat firepower and effectiveness of regional militaries. The addition of submarines (some outfitted with air independent propulsion) and modern surface combatants, amphibious assault ships, air-refuelled combat aircraft, and transport aircraft has extended these militaries' theoretical range of action. Airborne early warning (AEW) aircraft and UAVs have considerably expanded their capacities to “look out” over the horizon and in all three dimensions. *Consequently, conflict in the region, should it occur, is likely going to be more high-tech, that is, faster, more long-distance and yet more precise, and perhaps more devastating in its effect.*

Additionally, even an arms competition can result in a more insecure regional security environment. In

particular, continued purchasing of advanced weapon platforms may contribute to a classical “security dilemma”—a situation whereby actions taken by a country can actually undermine the security and stability that they were meant to increase. In this case, arms acquisitions by one state, even if it has no desire to threaten its neighbors, can often lead neighboring states to feel increasingly insecure. Reciprocal responses by neighboring states to “regain” security by buying their own advanced weapons often raise regional tensions further. Even defensively oriented weapons purchases, such as air defenses or lightly armed offshore patrol vessels, may be perceived as threatening, as they could conceivably be employed in anti-access/area denial operations in the event of conflict. Finally, even if such tit-for-tat arms purchases do not lead to conflict, they can reinforce mutual insecurities and suspicions, and ultimately have a deleterious impact on regional security.

CIVIL-MILITARY INTEGRATION

Most SEA nations possess only very small defense industries—and even smaller defense RT&D bases. Armaments production in Indonesia, Vietnam, and Thailand is generally reserved to state-owned enterprises, which are highly protected (due to their unprofitability) and kept separated from the rest of the economy. In Malaysia, arms production is mostly in private hands and employs only a few thousand workers; since nearly all production is for local consumption, the defense sector is again a segmented, protected endeavor. Consequently, there is very little overlap between the civilian and military arenas when it comes to RT&D. Even in Singapore, which arguably has the most advanced defense RT&D and production infrastructure, most indigenous defense development goes on in state-run RT&D institutes or manufacturing enterprises, where military work is kept segregated from civilian commercial work. It is almost impossible to find examples of technological advances in Southeast Asia's most advanced commercial sectors (even IT) being spun-on to defense RT&D.

CONCLUSIONS

We are unlikely to see much in the way of “radical” diffusion and proliferation of advanced military technologies, beyond what we see presently. Qualitatively, the types of technologies accruing to the region are significant, but the numbers will remain small, in some cases too small to make much of a difference in terms

of military decisiveness. That said, at the very least, these new types of armaments promise to significantly upgrade and modernize the manner of war fighting in the region, and to repeat, conflict in the region, should it occur, is therefore likely to be more devastating in its effect.

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