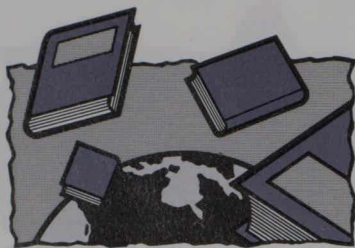


REVIEWS



Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies

Matthew Evangelista

*Ithaca, N.Y.: Cornell University Press,
1988, 300 pgs., US \$32.95*

Matthew Evangelista, a political scientist at the University of Michigan, begins this important book by asserting that "the relationship between technological innovation and the accumulation of new weapons lies at the core of the Soviet-American arms race." Indeed the dangers of the technological arms race have never been more apparent. As the United States and the Soviet Union continue negotiations to reduce nuclear arsenals, they are both proceeding with long-term plans to "modernize" their nuclear weapons.

Evangelista challenges the popular action-reaction cycle theory of the US-Soviet military innovation with a detailed examination of a multitude of factors which fuel the arms race: technological imperatives, threat perceptions, interservice rivalries, military doctrines and economic and bureaucratic interests being the most prominent.

The result – based on a thorough review of the literature, primary documents, military memoirs and a case study of the development of tactical nuclear weapons by both the United States and the Soviet Union – is a new account of the causes and mechanisms of the technological arms race. This conclusion is that the processes of weapons innovations in the two superpowers differ fun-

damentally: in the US, impetus for innovation comes "from the bottom," at the initiative of corporate or government researchers and military officials, whereas the centralized Soviet system produces innovation "from the top," in response to foreign (in other words Western) developments. Evangelista divides the modernization process into five stages in order to see which factors come into play at any given time and his methodology and analysis are convincing. He is both wary of forced generalizations and a simple accounting of "everything" that plays a role in weapon innovation. Nor does he claim too much, as he acknowledges that the evolution of "Star Wars" does not easily fit his model. The book, in my opinion, is by far the most extensive treatment available of the various factors which account for nuclear weapons modernization. My only criticism is that his analysis of American weapons innovation may somewhat understate the importance of US strategic nuclear doctrine (strategic superiority, extended deterrence, counterforce, and so on) in influencing which nuclear weapons innovations are encouraged.

Whether it be in regard to strategic nuclear arms or conventional forces in Europe, the arms race is proceeding with almost unchecked technological "advances." Evangelista recognizes this ongoing weapons modernization as a Pandora's Box which most often results in greater instability. The present period offers an opportunity to put a lid on the technological arms race and makes it all the more necessary to reflect and act upon Matthew Evangelista's final sentences: "In acknowledging the counterproductive nature of the techno-

logical arms race, the US and the USSR would open the way to cooperative agreements aimed at ending it. Both sides would fall under the shadow of the future instead of falling for the fallacy of the last move."

– Simon Rosenblum

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Anti-Submarine Warfare and Superpower Strategic Stability

Donald C. Daniel

*Urbana: University of Illinois Press,
1986, 240 pgs., US \$32.50*

Strategic Antisubmarine Warfare and Naval Strategy

Tom Stefanick

*Lexington, MA: Lexington Books, 1987,
416 pgs., US \$49.95*

For those interested in "strategic anti-submarine warfare (ASW)," it is a treat to have two comprehensive studies of this arcane subject published virtually simultaneously. The only other book-length studies appeared almost a decade and a half ago. Strategic ASW is directed at strategic, ballistic missile-carrying submarines (SSBNs) – usually considered the most "secure" (because least vulnerable to attack) leg of the strategic nuclear triad of each superpower. Considered "destabilizing" by many analysts because it threatens to deprive the other side of its ability to retaliate against – and thus deter – a first strike, strategic ASW is the centerpiece of the controversial new American naval doctrine known as the Maritime Strategy.

Of the two books under review, Stefanick's is the more detailed and technical. In fact, the bulk of it consists of eight appendices, on topics ranging from submarine design to "submarine detection in the Arctic Ocean and Northern Seas" (the latter, of course, being of special interest to Canadians). Daniel's book is a good, basic introduction for the general reader.

It is also useful for the specialist, not least because of its excellent documentation. Daniel's book is more narrowly focused on ASW; Stefanick puts it in the context of broader nuclear strategy and naval doctrine, including a trenchant critique of the Maritime Strategy, which had not yet been enunciated at the time of Daniel's writing.

The basic conclusions of the two works are quite similar: neither side's SSBNs are vulnerable to a surprise attack or very rapid attrition during a conventional war, now or for the foreseeable future; "barrage attacks" by ballistic missiles on wide expanses of the ocean to "kill" SSBNs are infeasible, given the area to be covered and the relatively limited number of attacking warheads; and a breakthrough in non-acoustic means of detection (such as the surface detection of submarine wakes) is unlikely. Daniel points out that, even if the latter were to occur, converting it into an operational system would be a slow and readily detectable process, providing ample time for relatively simple countermeasures to be developed.

Both authors discuss the SSBN vulnerability question in terms of two scenarios: (1) a surprise, all-out, first-strike attack; and (2) gradual attrition during a lengthy conventional war. The feasibility of the first is rightly dismissed by both. As for the second, Daniel argues convincingly that the Soviets would not be likely to unleash their submarine-launched ballistic missiles against the continental US for fear of otherwise "losing" them, as this would invite full-scale nuclear retaliation. However, he fails to address the possibility that, in responding to US attacks on their SSBNs, the Soviets might breach the nuclear "threshold" at sea, by attacking US carrier battle groups with nuclear weapons, which could lead to wider nuclear