Cautious Optimism on High-Tech Weapons for NATO Forces

In a report released this week on new nonnuclear technologies that could enable NATO to fight more effectively, the Office of Technology Assessment (OTA) strikes a cautiously optimistic note. Weapons now available or in advanced development could significantly boost the West's ability to attack Warsaw Pact targets behind the front lines of battle, according to the report. This is a key element of a combat plan, known as Follow-On Forces Attack (FOFA), which is designed to attack troop reinforcements and equipment before they can be brought to the front. NATO endorsed the strategy in 1984, despite controversy over its military wisdom and technical feasibility.

"Most of the systems needed for an effective FOFA capability either exist or are in various stages—mostly the later stages—of development," states the report. "By and large the issue is not one of starting new programs . . . but one of keeping the necessary programs alive both technically and financially."

The 200-page report, called "New Technology for NATO," throws cool water on the more extravagant claims that some defense analysts have made on behalf of high-tech weaponry. At least until the end of this century, says OTA, FOFA will emphasize attack of relatively short-range targets, within 40 kilometers of the front lines. Moreover, important technical problems remain to be solved, and some systems, particularly "brilliant" bomblets that can independently recognize and home in on such targets as moving Soviet tanks, have never shown that they would work consistently on a European battlefield.

Cost estimates for the new weapons, apart from official Air Force and Army budget projections, are not included. The report warns, however, that "it will be necessary to procure them in complete packages of systems . . . and buy enough of each to make a difference."

According to OTA's Alan Shaw, project director for the study, "We specifically avoided [making cost estimates], against some pressures to do so." Shaw said, "We didn't see any way to get an honest handle" on the cost of carrying out the FOFA strategy, because many weapons, such as the F-15E fighter-bomber, will be used for many different missions besides attacking follow-on forces.

Another gap in the study is left by the OTA staffers' inability to obtain information about supersecret stealth technology, which can make aircraft nearly invisible to radar. OTA staff state frankly in the report that they were unable to come to any conclusion about one hotly debated issue—what sort of aircraft should carry a key radar system designed to follow Soviet troop movements—because of the secrecy surrounding an alternative stealthy aircraft.

Calling FOFA "a modest success story in the history of NATO," the study concludes that most European allies support at least some of the new strategy. "The question is more, What is going to be built and who is going to build it?" said Shaw. The report notes, however, that European governments are increasingly insisting on cooperative arms programs that invest in European technological development as well as production jobs. "This may ultimately pose a dilemma for the United States," states the report.

Concerns about FOFA's technical feasibility are not so much due to the problems of individual weapons, according to the study. Much more worrisome is the difficulty of getting combinations of such sensors, information processing systems, missiles, and munitions to work together effectively in a package.

If there is a technological Achilles heel to the entire concept, the study indicates, it is in the low priority often given to munitions such as self-guided bomblets, which represent the last link in this complex chain of advanced systems. Current munitions are either randomly scattered over the target area, with a correspondingly low chance of hitting anything, or are very expensive, and can destroy only one target per projectile.

In briefly reviewing Soviet abilities to counter and outwit FOFA, the study concludes that any Warsaw Pact response would impose costs and be only partially effective. Two lessons can be drawn from the confusing debate in the West about possible Soviet options, said Shaw. "First, you can never predict accurately what the Soviets will do. And second, there will always be follow-on forces."

A 22-member advisory panel drawn primarily from defense industry and Pentagon consulting firms oversaw the OTA project, meeting five times with project staff during the 2-year study to review drafts of the report. OTA staffers also went on two lengthy trips to Europe, visiting NATO military command centers and various national capitals. The report summarizes other studies of FOFA that NATO and the Pentagon have commissioned in 200 pages of classified appendices. They are available to those with a need-to-know and a secret clearance. ■ DANIEL CHARLES

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New Technologies Good for Employment

Reams have been written about the effects of new technology on employment and the nature of the work force. But according to a new report* from the National Academy of Sciences, what it all adds up to is there is not much to worry about and the faster new technology is adopted throughout the economy, the better.

According to the panel, headed by Carnegie-Mellon University president Richard M. Cyert, "reports of a vanishing middle class due to technological change are exaggerated," and "new technology will not bring massive unemployment." To the contrary, reductions in labor requirements because of increased efficiency "have been and will continue to be outweighed by the beneficial employment effects of the expansion in total output that generally occurs."

Cyert said at a press conference that there was "great agreement" within the panel, which included representatives from labor, academia, and high-tech industries, that "technology is not the problem but the solution" to America's competitiveness problems. "The main problem is not change but resistance to change." The panel said that relative employment shrinkage in the manufacturing sector is not because of new technologies but because of industry's slowness in adopting them. The panel agreed that the effects of technological changes on employment occur gradually, noting that technology is only one of many relevant factors, along with economic growth rates and labor supply, among others.

The report calls for improvements in job retraining programs for the estimated 1 to 2.3 million workers displaced annually, as well as in programs to improve basic literacy among entrants to the work force. But there is no evidence that, "as a result of technological change, the skills required to get a job or keep a job in the future will be substantially different from what they are today." ■

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**Technology and Employment: Innovation and Growth in the U.S. Economy*, by the Panel on Technology and Employment of the Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine.