

acquisition.<sup>29</sup> Finally, in many states in the developing world the modernization and procurement of major weapons is proceeding along a twenty to thirty-year cycle. Those states which made major acquisitions of modern platforms throughout the 1970s and early 1980s will find that they require upgrading and replacement programs in the first decade of the next century, merely in order to maintain their existing arsenals. Although this may proceed over a long time frame, it does not reflect any fundamental shifts in the nature of the weapons proliferation and diffusion problem.

The final long-term factor that requires some mention is what analysts are calling the "military-technological revolution" (MTR).<sup>30</sup> It refers to the incorporation of revolutionary advances in electronics, artificial intelligence and computing, command and control systems, and materials technologies into modern weapons systems. Some of the weapons being planned or discussed include: smart conventional weapons (high single-shot kill ratio, intelligent guidance), stealthy platforms, extended range delivery systems, electronic warfare systems, or intelligent C<sup>3</sup>I systems. In its most radical formulation, the MTR would require a complete reorganization of the modern armed forces, into decentralized and autonomous high-tech forces with a cobweb command and control structure.

Obviously, this is of little immediate interest for controlling conventional proliferation, and such futuristic weapons stretch the meaning of "conventional" beyond all recognition. There are two issues that are important, however. First, if one acknowledges that the proliferation of these forthcoming weapons innovations could or would be destabilizing or dangerous, this would justify at least some current effort to create conventional non-proliferation regimes robust enough to form the basis for future efforts. Many early arms control agreements in the nuclear era (the Seabed and Outer Space treaties, in particular), were designed exactly in this fashion: to meet future anticipated threats. Second, many of the technologies of the MTR (such as computer hardware and software for avionics, missile guidance systems, battlefield command and control systems, or electronic warfare measures and counter-measures) can be treated as *components* of existing weapons platforms, and the transfer of these technologies themselves could pose a proliferation threat if used to dramatically improve the battlefield performance of aircraft or missiles.

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<sup>29</sup> See Robert Looney, *Third-World Military Expenditures and Arms Production* (London: Macmillan, 1988); Robert McKinley, *Third World Military Expenditure: Determinants and Implications* (London: Pinter, 1989).

<sup>30</sup> Dan Gouré, "Is there a Military-Technical Revolution in America's Future?" *The Washington Quarterly*, 16:4 (1993), 175-192; Seth Carus, "Military Technology and the Arms Trade: Changes and their Impact," *The Annals of the American Academy of Political and Social Science*, (forthcoming, September 1994); Manuel de Landa, *War in the Age of Intelligent Machines* (New York: Zone Books, 1991).