The US Army War College Quarterly: Parameters

Volume 27
Number 3 *Parameters Autumn 1997*

Article 4

8-22-1997

21st-Century Land Warfare: Four Dangerous Myths

Charles R. Dunlap Jr.

Recommended Citation
Charles R. Dunlap Jr., "21st-Century Land Warfare: Four Dangerous Myths," *Parameters* 27, no. 3 (1997), doi:10.55540/0031-1723.1835.

21st-Century Land Warfare: Four Dangerous Myths

CHARLES J. DUNLAP, JR.

From *Parameters*, Autumn 1997, pp. 27-37.

The US intervention in Somalia provided us with a stinging example of how people from one of the world's poorest regions can confront a high-tech global superpower militarily and emerge with a measure of success. Such experiences lead one to think about the nature of future war and particularly how the rapidly declining costs of emerging technologies might empower those in the so-called "less developed" parts of the globe.[1]

Much of the current discussion of future war underappreciates or overlooks altogether several key effects of the ongoing technological transformation. Those experts who assert that emerging information and computer capabilities are producing a Revolution in Military Affairs may be generally correct, but it is something else entirely to assume that this "revolution" inevitably favors today's developed nations.[2] As an example of such thinking, a recent issue of *The Economist*, as well as an interesting new book by George and Meredith Friedman, appear to conclude that this revolution will give the United States a virtually insurmountable advantage in future conflicts.[3]

One hopes that will be the case. All too often, however, we tend to underestimate opponents from disadvantaged nations even though there are many instances in history--Vietnam and Somalia being clear illustrations--where low-tech opponents successfully dealt with advanced technology wielded by well-trained troops of highly developed nations.

In that vein, there appear to be four dangerous myths in current thinking about 21st-century land warfare. Each will be addressed in turn.

Myth #1: Our most likely future adversaries will be like us.

Many in uniform will insist that they are not laboring under this myth. But when one examines the literature coming out of the US defense establishment, it all too often suggests that the United States foresees an adversary who thinks more or less as we do and organizes his forces and employs his weapons accordingly. We seem to be preparing for an opponent who will fight us essentially symmetrically, much as Iraq tried to do.[4] To the contrary, our most likely future opponents will be unlike us in important respects; consequently, they will approach warfare from a different perspective, perhaps a radically different one.

As Harvard professor Samuel Huntington might put it, future conflicts may well be clashes between civilizations, and the moral, political, and cultural norms of our opponents will likely differ from those of the United States and the West.[5] Within some of those civilizations another phenomenon is brewing: In a fascinating piece in the Summer 1994 issue of *Parameters*, Ralph Peters described what he called the rise of "The New Warrior Class," a multitude which he contends "already numbers in the millions." Peters suggests that in the future, America "will face [warriors] who have acquired a taste for killing, who do not behave rationally according to our definition of rationality, who are capable of atrocities that challenge the descriptive powers of language, and who will sacrifice their own kind in order to survive."[6]

Along similar lines, Professor John Keegan, perhaps the foremost military historian of our times, has observed that the post-Cold War world is experiencing in Afghanistan, Somalia, the Balkans, and elsewhere the reemergence of "warrior" societies. These are peoples, he says, who are psychologically distinct from the West, and whose young are "brought up to fight, think fighting honorable, and think killing in warfare glorious." A warrior in such societies,

Keegan has written, "prefers death to dishonor and kills without pity when he gets the chance."[7]

Until now, many of these groups lacked the ability to coalesce in an effective manner. But the spectacular decline in the cost of computers and communications technology has the potential to dramatically empower them. *U.S. News & World Report*, for example, recently predicted that a new generation of communications satellites would inexpensively link virtually every part of the globe. Importantly, the author noted that for "disadvantaged regions of the world . . . the coming satellite communications revolution could be one of those rare technological events that enable traditional societies to leap ahead."[8]

These new communication systems have the potential to unite like-minded peoples into what might be called "cybertribes." An article in the Spring 1997 issue of *Foreign Policy* observes, "The Internet has already overrun geographic borders, making possible the creation of virtual communities of shared interest that transcend national borders."[9] Some of these "virtual communities" or cybertribes may be hostile to US interests. As a foreshadowing of what may be to come, neo-Nazi and other hate groups already use the Internet to spread their ideology and to maintain contact with their confederates.[10]

Furthermore, a key feature of these warrior societies is the often charismatic nature of the leadership elites. Direct broadcast satellites, enhanced holographic "telepresence," and other multimedia techniques will enable such leaders to leverage their charisma in a realistic way to enormous audiences spread over immense areas.

These cybertribes--or "streetfighter" nations as some analysts describe them[11]--could change the face of 21st-century land warfare by waging what might be termed *neo-absolutist war*. This would be a vicious form of conflict extending across the spectrum of warfare. It would differ from more traditional "total war" by, among other things, the propensity of the aggressor to focus not on destroying military forces, but rather on shattering the opponent's *will*.

In doing so, these warrior-society, streetfighter nations would ignore the Western concepts of war, instead deeming those outside the favored group as not entitled to humane treatment. Indeed, such an adversary would see the moral, political, and cultural values of his opponent as asymmetries to be exploited whenever possible. In a sense, such warfare has existed throughout the history of man, but information-age technology would modernize it (hence the term "neo") and vastly expand its potential.

In such a scenario, future opponents would not hesitate to use brutality openly to exploit the growing aversion to casualties that more and more shapes the political and military decisions of Western-style democracies.[12] Consistent with neo-absolutist war, our enemies might seek to manipulate us through brazenly displayed barbarism. Why? For the simple reason that it seems to work. Consider the reaction when Somalis dragged the body of a US serviceman through the streets of Mogadishu, or when Chechens took civilians hostage at a Russian hospital,[13] or when Serbs chained UN personnel to potential targets. Likely opponents might well believe that such strategies are an effective way to coerce democracies--even if those democracies are, by orthodox military calculations, more powerful.

In short, the 21st century may bring to our door an unwanted new kind of land warfare, neo-absolutist war, total war brutally waged by unconstrained enemies enfranchised by technology. The conflict in Chechnya might be a prototype.

Myth #2: We can safely downsize our military in favor of smaller, highly trained forces equipped with high-technology weapons.

With the end of the Cold War the United States and many other nations appropriately downsized their militaries.[14] Yet despite warnings from respected leaders,[15] some people insist that further reductions are still possible if the smaller number of troops are well-trained and have high-tech weaponry.[16]

The problem is that technology will so "equalize" the battlefield that the expected comparative advantage which smaller, well-trained, high-tech forces are supposed to provide will never be achieved. Technology will also allow a foe to wage war on the cheap. For example, technology is supposed to give our forces an edge in training; but consider that the dramatic advances in computerized teaching techniques also will make sophisticated instruction available at low cost to the masses in less-developed areas. This instruction will not just address ways to learn to use or maintain particular weapon systems,[17] but also methods to master actual tactical combat techniques. Sound far-fetched? In

the April 1997 issue of *Wired* magazine is a story that explains how a $49 computer simulation program is being used to teach young Marines just such skills.[18] Furthermore, documents such as *Joint Vision 2010*[19] already suggest that advanced but inexpensive personal information devices[20]--literally a computer-on-the-hip--will allow an unprecedented degree of command and control over individual soldiers.[21] One step further leads to a vision in which artificial intelligence combined with voice recognition systems will allow a relatively untrained soldier to access all kinds of expertise and information anywhere on the battlefield.[22] Future adversaries may be able to create "virtual" noncommissioned officers in this way, countering a significant advantage that US forces have long enjoyed.

More fundamentally, and perhaps quite surprisingly, future soldiers may not have to be all that well trained. New, user-friendly software may enable soldiers with little formal education to operate complex weaponry. Indeed, some militaries may abandon altogether equipment requiring highly skilled operators--manned aircraft for example--in favor of fully automated systems such as fire-and-forget missiles, or low-tech versions of the cruise missile: business jets on autopilot carrying a payload of biological agents.

Nor will US troops necessarily have a monopoly on the latest, high-tech weapons. Indeed, technology may "level" the battlefield in this respect as well by allowing, as one expert put it, "relatively weak countries to leapfrog . . . to battlefield superiority."[23] The are a number of reasons for this, including the fact that the expensive, militarily-unique research and development (R&D) base that allowed the United States and other First World nations to develop superior weaponry for so much of the 20th century is unnecessary in the information age: a home computer might suffice. What is more, a future foe could leverage the world's commercial R&D investments in those civilian systems that intrinsically have military applications.[24] Fears already abound that commercially available technology may allow low-tech unmanned aerial vehicles to become the "poor man's weapon of mass destruction."[25]

Clearly, because so many commercial uses of information and computer technology exist, no nation will long be able to maintain a monopoly on the latest developments. Furthermore, even the manufacture of such systems is shifting to less-developed areas to take advantage of low labor costs and other incentives. While it's unlikely that the World Bank would finance a tank factory, it might support the development of a computer industry despite the warfighting potential of such a dual-use infrastructure.

Most important, the United States and other First World nations are becoming ever more dependent upon commercial, off-the-shelf technology. Consequently, we should expect that our adversaries will be buying much the same technology on the open market.[26] Although information technology is touted as a means to get inside an adversary's "decision loop,"[27] the reality is that a streetfighter or warrior nation unencumbered by Western-style procurement regulations might easily be able to get inside our "acquisition loop" and field newer weaponry well before we finish buying already obsolete equipment.[28]

Thus, with the training advantage neutralized by technology, and with adversaries armed with technology similar or even superior to ours, success in 21st-century land warfare may depend upon the sheer numbers of combatants engaged. This is an ominous challenge. It may even require an information-age draft, notwithstanding all the attendant social upheaval, to produce enough soldiers to counter streetfighter nations and warrior societies willing to put millions of technology-equipped citizens under arms. This is especially worrisome because warrior societies start out with individuals generally fiercer, more tolerant of adversity, and more willing to endure physical hardship than the typical Western conscript.

Myth #3: We can achieve information superiority and even dominance in future conflicts.

Even as *Joint Vision 2010* insists that "we must have information superiority,"[29] the information explosion engendered by new technologies may not let *any* combatant achieve superiority, much less dominance. One reason will be the transformation of the media as it exploits the new technologies. We already know that the media can project powerful images that can build or erode public support for a military operation.[30] Historically, however, governments with a mind to do so have been able to exercise significant control over media access to war zones as well as the dispatch of stories from battlefields.

That will seldom be the case in the future. One can envision "vertically integrated" news organizations with their own surveillance satellites and self-contained communication systems that will allow them to function virtually

autonomously. Indeed, one firm, Aerobureau of McLean, Va., already can deploy a self-sustaining flying newsroom. The aircraft is equipped not only with multiple, redundant satellite video, audio, and data communication links, but also gyro-stabilized cameras, side- and forward-looking radars, and, believe it or not, its own pair of camera-equipped remotely piloted vehicles.

Information technologies will empower news organizations to such a degree that virtually no significant observable detail will escape their view, and huge interconnected databases will add tremendously to their data sources.[31] Advanced software, along with a cadre of expert ex-military consultants, will enable them to fuse the raw inputs into useful, real-time or near real-time reportage. With immense quantities of information available from the global media, what need will there be for our future enemies to spend money building extensive intelligence capabilities? The media will become the "poor man's intelligence service."

The media's ability to provide real-time battlefield reports independent of military control will likely create difficulties for casualty-averse democracies. During the Gulf War we saw how gruesome photos of the so-called "highway of death" undermined support for continuing the war, and those were pictures of the destruction of a brutal *enemy* force. What should we expect when the bodies are those of our friends and relatives? Tomorrow's communication capabilities may allow the families of soldiers to establish a "virtual presence" with them on the battlefield. When live media reports combined with information from other high-tech sources begin to communicate the horrific shrieks and terrifying sights of death and mutilation *as it happens* to a loved one in combat, the political pressure to terminate hostilities at almost any price may become inexorable.

In addition to the information disseminated by the news media, information will spew from the proliferating--and vulnerable--presence of personal cell phones,[32] laptop computers equipped with e-mail,[33] and fax machines that troops themselves own and carry with them.[34] This avalanche of information will profoundly affect 21st-century land warfare, particularly in the areas of discipline and operational security. As *Newsweek* observed more than five years ago, "If soldiers can phone mom or the local newspaper from the middle of the battlefield, what are the implications for maintaining military discipline or secrecy?"[35] The obvious answer is that both will suffer.

Added to these information sources, future adversaries will also be able to buy high-resolution commercial satellite products on the open market.[36] Given all these information sources, a goal of seeking information "superiority," let alone "dominance"[37] on 21st-century battlefields is unrealistic, even quixotic; instead, savvy militaries will focus on developing doctrine and strategies for operating in an environment of information transparency or information parity.

Myth #4: Modern technology will make future war more humane if not bloodless.

It has become almost an accepted truth in the United States and many Western nations that information technologies will allow wars to be waged virtually bloodlessly. In a scenario depicted in a 1995 *Time* magazine article, a US Army officer conjured up a future crisis in which someone sitting at a computer terminal in the United States could derail a potential aggressor "without firing a shot."[38] The officer visualized the foe's phone system brought down by a computer virus, logic bombs ravaging the adversary's transportation network, false orders confusing his military, propaganda messages jamming his television broadcasts, and our computer operator electronically zeroing out the enemy leader's bank account. All of this is expected to cause the adversary to just give up.

Perhaps all of that is technologically possible. But perhaps technology will become so inexpensive that even relatively poor nations will be able to afford redundancies that would severely reduce, if not eliminate, the likelihood of success in cyber-attacks. We also seem to continually underestimate the ability of foes to devise low-tech ways to circumvent high-tech capabilities. Shouldn't we expect that our targets will plan work-arounds for precisely this kind of cyber-assault? Isn't it also possible that such an enemy might even develop a cell of operators who are equally technologically sophisticated, perhaps trained in American universities, and who might beat us to the punch?

In any event, the officer in that *Time* article fundamentally misapprehends the nature of our most likely adversaries by assuming that they would engage in the kind of cost-benefit approach to conflict that we frequently do. Maybe we in the West at the end of the 20th century would be ready to give up on a military effort if phone or electrical systems were disrupted or if our bank accounts were emptied. But it is a peculiarly naive bit of Western cultural chauvinism to

presume that an enemy in a future conflict would abandon his cause for such reasons. We cannot count on such discomfiture deterring a warrior society or a streetfighter nation driven by a powerful sociological imperative and acting under the spell of a charismatic leader.

In fact, future war may become *more* savage, not less so. An adversary waging neo-absolutist war could resort to a variety of horrific actions (many, incidentally, of the low-tech variety) to offset and divert high-tech US forces. The aim of these efforts would be to cause political difficulties for US national leaders dependent upon domestic and international public support.

As just one example, consider the consequences if an adversary--relying on miniaturized communications devices to maintain command and control--deliberately dispersed his forces into civilian areas.[39] His intent would be to discourage high-tech attacks by raising fears that there would be a replay of the furor that followed the US bombing of the Al Firdos bunker during the Gulf War. Recall that the unexpected civilian casualties from the F-117 strike on that bunker led to a dramatic reduction in the raids on downtown Baghdad.[40] If killing civilians can complicate a democracy's war effort, then those intent upon waging neo-absolutist war will not hesitate to induce "collateral damage" situations.

Precision weapons will be no panacea in a high-tech war. Critical supply facilities as well as those communications nodes that can't be miniaturized and dispersed may be buried below POW camps, schools, hospitals, and similar facilities. Again the objective would be to deter high-tech attacks by playing on the legal and moral conundrums that would arise, for example, in a situation where one could destroy an underground ammunition dump only by bombing a hospital above it.[41]

Additionally, knowing the traditional US concern for POWs, an enemy might openly abuse them--especially female prisoners--to create a political controversy that could benefit them by exploiting our cultural norms and values. This is but another example of seeking an asymmetry in neo- absolutist war.

Finally, there is the issue of hostages[42]--some from third countries--who might be used as human shields[43] to try to influence US war policy. The adversary's own people could be exploited: young boys could be conscripted into the military to carry out atrocities;[44] thousands of civilians could be sacrificed in unique and gruesome psychological ploys. An enemy could triumph if we fail to develop appropriate strategies and programs to deal with such a vicious adversary made potent by emerging technologies.

Conclusion

We cannot be modern-day, anti-technology Luddites. We must, of course, take advantage of the latest technology and incorporate it into our military forces. In doing so, however, we should constantly ask ourselves: what will a given technology drive our adversaries to do?[45] That will be a key issue of 21st-century land warfare, and those who carefully examine the answers will prevail on tomorrow's battlefields.

As we look to the future we must continually remind ourselves--and our decisionmakers--that war, notwithstanding its technology, will remain the savage clash that it always has been. We will face adversaries who will not play by our rules and, indeed, who see our values as vulnerabilities. As James F. Dunnigan noted in his recent book on future war, "If the opponents are bloody-minded enough, they will always exploit the humanitarian attitudes of their adversaries."[46] Make no mistake about it, technology cannot transform war into a genteel electronic exchange as some hope. Video games are not the paradigm for warfare in the next century.

Moreover, we should not expect our enemies--and especially those of other cultures--to necessarily use technology in the same way we do, or to employ high-tech weapons as we would. Perhaps in considering the effect of high technology on warfare, it is worth recalling the words of Vice Admiral Charles Turner Joy from more than 40 years ago: "We cannot expect the enemy to oblige by planning his wars to suit our weapons; we must plan our weapons to fight war where, when, and how the enemy chooses."[47]

NOTES

1. Some experts predict that by the year 2000 a chip costing less than $100 will have the power of supercomputers costing $320 million in 1994. See *Bottom-up Review of Defense Programs: Hearings Before the House Armed Services Committee Military Forces and Personnel Subcommittee* (statement of John L. Petersen) 1 March 1994 (Federal Document Clearing House).

2. For a discussion of the "revolution in military affairs" in the information age, see generally, "Select Enemy. Delete.," *The Economist*, 8 March 1997, p. 21; Eliot A. Cohen, "A Revolution in Warfare," *Foreign Affairs*, 75 (March-April 1996), 37; Andrew F. Krepinevich, "Cavalry to Computers: The Pattern of Military Revolutions," *The National Interest*, No. 37 (Fall 1994), p. 30; and James R. Fitzsimonds and Jan M. Van Tol, "Revolutions in Military Affairs," *Joint Force Quarterly*, No. 5 (Spring 1994), p. 24.

3. "The Future of Warfare," *The Economist*, 8 March 1997, p. 15; George and Meredith Friedman, *The Future of War* (New York: Crown Publishers, 1997).

4. For a critique of this trend, see A. J. Bacevich, "Preserving the Well-Bred Horse," *The National Interest*, No. 37 (Fall 1994), p. 43.

5. See generally, Samuel P. Huntington, *A Clash of Civilizations and the Remaking of World Order* (New York: Simon & Schuster, 1996). Compare Robert D. Kaplan, "The Coming Anarchy," *The Atlantic Monthly*, February 1994, p. 44.

6. Ralph Peters, "The New Warrior Class," *Parameters*, 24 (Summer 1994), 24.

7. John Keegan, "The Warrior's Code of No Surrender," *U.S. News & World Report*, 23 January 1995, p. 47.

8. William J. Cook, "1997 A New Space Odyssey," *U.S. News & World Report*, 3 March 1997, pp. 44, 52.

9. Daniel F. Burton, "The Brave New Wired World," *Foreign Policy*, No. 106 (Spring 1997), p. 36.

10. See Anti-Defamation League, *The Web of Hate: Extremists Exploit the Internet* (1996).

11. Dan Cordtz, "War in the 21st Century: The Streetfighter State," *Financial World*, 29 August 1995, p. 42 (discussing, "Will the U.S. be ready to fight enemies who don't play by the traditional rules?").

12. See generally, Thomas L. Friedman, "`No-Dead War' Poses Problem for U.S.," *Omaha World- Herald*, 25 August 1995, p. 24; and Edward Luttwak, "Post-Heroic Armies," *Foreign Affairs*, 75 (July-August 1996), 33.

13. See Stephen Erlanger, "Russia Allows Rebels to Leave with Hostages," *The New York Times*, 20 June 1995, p. 1 ("Nearly all the demands of Chechens are met").

14. Between 1990 and 1997 the US military's troop levels fell by 29.6 percent. See George C. Wilson, "Tough Choices Loom for the Services," *Air Force Times*, 20 January 1997, p. 14.

15. See e.g., Sean D. Naylor, "General: Technology is No Substitute for Troops," *Air Force Times*, 3 March 1997, p. 26 (citing remarks by General John Sheehan, USMC, Commander-in Chief of US Atlantic Command).

16. See e.g., Jeff Erlich and Robert Holzer, "QDR Turns to Troop Cuts to Afford Weapons," *Defense News*, 12-23 February 1997, p. 3.

17. See e.g., Rick Adams, "The Realities of Simulation," *Armed Forces International*, December 1996, p. 34 (quoting an expert: "Simulation is going to continue to remain an important factor. . . . It's a lot cheaper than flight hours, tank fuel, and live exercises").

18. Robert Riddell, "Doom Goes to War," *Wired*, April 1997, p. 114.

19. Chairman of the Joint Chiefs of Staff, *Joint Vision 2010* (Washington: GPO, 1996), p. 18.

20. See generally, J. D. Reed, "Pocketful of Miracles?" *Time Digital* (a technology supplement to *Time* magazine), 10 March 1997, p. TD 40 (discussing currently available hand-held computers and personal information devices).

21. Compare, Steve Nadis, "Ready-to-Wear PCs," *Popular Science*, March 1997, p. 35.

22. Compare, George I. Seffers, "U.S. Army Puts Tactical Internet to Test," *Defense News*, 17-23 March 1997, p. 3 (describing a battlefield information/communication system currently being tested).

23. See David Shukman, *Tomorrow's War: The Threat of High-Technology Weapons* (San Diego: Harcourt-Brace, 1996): "Technologies of a bewildering variety . . . are suddenly on the loose and the competition to find new ways of putting them to military use is no longer the preserve of the most advanced industrial nations. There is now a free-for-all to acquire weapons which may allow even relatively weak countries the chance to leap-frog their way to battlefield superiority--at what could hardly be a more uncertain or unstable time." (p. viii)

24. See e.g., Stephen Bryen, "New Era of Warfare Demands Technology Reserve Force," *Defense News*, 17-23 March 1997, p. 27 (noting that key advances in information technology are principally produced by the commercial sector); and Bob Preston, *Plowshares and Power: The Military Uses of Civil Space* (Washington: National Defense Univ. Press, 1992), p. 4 (warning that "a regional power could exploit the world's investment in civil space systems and technology for military advantage").

25. See Frank Oliveri, "U.S. Experts Fear Spread of UAV Technology," *Defense News*, 28 August - 3 September 1995, p. 12.

26. Bryen, p. 27 (discussing the effects of the availability of commercial off-the shelf technology on future war, notes that a "technically sophisticated adversary [even though otherwise an undeveloped country] could paralyze U.S. military forces").

27. See e.g., "The Software Revolution; The Information Advantage," *The Economist*, 10 June 1995, p. 11 (discussing how information technology will allow a combatant to get through the observation, orientation, decision, and action [OODA] loop faster and thus maintain the initiative).

28. See Shukman, p. 8: "While the western military struggle for a decade on average to acquire new weapons, a country with commercially available computer equipment and less rigorous democratic and accounting processes could field new systems within a few years. It is the stuff of military nightmares." See also Michael Loescher, "New Approaches to DoD Information-Systems Acquisition," in *Cyberwar: Security, Strategy and Conflict in the Information Age*, ed. Alan D. Campen, et al. (Fairfax, Va.: AFCEA International Press, 1996), p. 127: "In a world in which state-of-the-art is off-the-shelf, industry, and potentially our foes, can obtain better information systems (IS) technology cheaper and faster than DoD because our current acquisition system buys computers in the same way we buy bullets"; and Jeffery R. Barnett, *Future War* (Maxwell AFB, Ala.: Air Univ. Press, 1996), p. 17 (stressing the need to compress the procurement time for information technologies).

29. *Joint Vision 2010*, p. 16.

30. Chris Morris, Janet Morris, and Thomas Baines, "Weapons of Mass Protection: Nonlethality, Information Warfare, and Airpower in the Age of Chaos," *Airpower Journal*, 9 (Spring 1995), 17-18, note: "The focus of world leaders on areas of crisis is primarily determined not by internal evaluation of the importance of any chaotic situation to the national security of the United states or other nations but by the amount of media attention given to a crisis. Since media coverage is often sought, courted, or even bought by aggressors, combatants, or defenders, the initiative in such situations is on the side of those who can command world attention."

31. Compare, Bill Gertz, "Spies Use Internet to Build Files on U.S.," *Washington Times*, 3 January 1997, p. 5 (discussing the use of the Internet as "simple, low-cost, non-threatening and relatively risk free" way of collecting data valuable to intelligence agencies).

32. According to Representative Newt Gingrich, "Virtually every soldier in combat in 2010 will have somewhere on their body a personal telephone linked by satellite to a world telephone network." As quoted in Nicholas Wade, "Bytes Make Might," *The New York Times Magazine*, 12 March 1995, p. 28.

33. See e.g., Brigid Schulte, "How a Fighter Pilot's Raw Account of Rescue Flashed Around the Globe," *Philadelphia Inquirer*, 11 July 1995 (describing how a private e-mail allegedly containing "explicit descriptions of radio frequencies, pilot code names, exact times and weapons load for the mission," related to the rescue of US pilot Scott O'Grady in the Balkans, became available to millions on the Internet).

34. See e.g., "Generals to Moms: At Ease!" *Omaha World-Herald*, 16 February 1996, p. 6 (discussing Israeli recruits arriving for training with personal cellular phones and using them to call their mothers to complain about various aspects of their military duties); and Lisa Hoffman, "E-Mail Will Link Troops to Families," *European Stars and Stripes*, 18 December 1995, p. 7.

35. See also Wade, p. 28: "Would any commander want his soldiers to receive parental advice in the midst of a firefight? What if Dad disagrees with the officer in the scene? As Napoleon said, one bad general is better than two good ones."

36. See William J. Broad, "Private Ventures Hope for Profits on Spy Satellites," *The New York Times*, 10 February 1997, p. 1.

37. See also Sean D. Naylor, "War Game Illustrates Vulnerabilities," *Air Force Times*, 17 March 1997, p. 31 (asserting that a "recent Army wargame set in 2020 revealed that the U.S. military's increasing reliance on satellite based "information dominance" may prove as much of a liability as an asset in a real conflict").

38. See Douglas Waller, "Onward Cyber Soldiers," *Time*, 21 August 1995, p. 38.

39. See "Ties that Bind," *The Economist*, 10 June 1995, p. 19 (discussing the need for irregular armies to disperse in the face of information-superior opponents and noting that cites "pose problems" for "high-flying observations systems").

40. See Michael R. Gordon and Bernard E. Trainor, *The Generals' War* (Boston: Little, Brown, 1995), pp. 324-26.

41. In Somalia, US forces were presented with a similar conundrum: "Throngs of women and children crowded around UN peacekeepers, allowing armed Somalis to get close enough to wipe out the UN troops with automatic weapons. While a risky tactic, the Somalis knew it had a good chance of success. If the opponents are bloody-minded enough, they will always exploit the humanitarian attitudes of their adversaries." (James F. Dunnigan, *Digital Soldiers: The Evolution of High-Tech Weaponry and Tomorrow's Brave New Battlefield* [New York: St. Martin's Press, 1996], p. 219).

42. Compare, Bill Gertz, "Serbs Told to Take GIs Hostage," *Washington Times*, 22 February 1996, p. 1.

43. Compare, "Libyans to Form Shield at Suspected Arms Plant," *The Sun* (Baltimore), 17 May 1996, p. 14 (reporting a Libyan threat to surround a suspected chemical weapons plant with a human shield composed of millions of Muslims).

44. Compare, Mark Frankel et al., "Boy Soldiers," *Newsweek*, 14 August 1995, pp. 44-46, discussing the growing use of young boys as soldiers in Third World nations. Frankel reports that "Boys will do things that grown men can't stomach" and quotes a UNICEF worker who states "Kids make more brutal fighters because they haven't developed a sense of judgment." (p. 45)

45. See e.g., David R. Markow, "The Russians and Their Nukes," *Air Force Magazine*, February 1997, pp. 40-41: "Many Russian military theorists believe nuclear weapons provide the best answer to the challenge posed by conventionally armed precision guided munitions, which have become such an important part of Western military strategies. Russian generals fear that, in a general war, Western nations could employ such `smart munitions:' to degrade Russian strategic forces, without ever having to go nuclear themselves. Consequently, said General Volkov,

Russia "should enjoy the right to consider the first [enemy] use of precision weapons as the beginning of unrestricted nuclear war against it."

46. Dunnigan, p. 219.

47. As quoted in Robert Heinl, ed., *Dictionary of Military and Naval Quotations* (Annapolis: US Naval Institute, 1984), p. 358.

Colonel Charles J. Dunlap, Jr. (USAF) is Staff Judge Advocate, United States Strategic Command, Offutt Air Force Base, Nebraska. He is a graduate of St. Joseph's University and earned his J.D. degree at Villanova University. He is also a graduate of the Armed Forces Staff College, the Air War College, and the National War College. Colonel Dunlap was selected as the US Air Force's "Outstanding Career Armed Services Attorney" in 1992, and in 1995 received the Thomas P. Keenan, Jr., Award for contributions to international and operations law.

Reviewed 20 August 1997. Please send comments or corrections to carl_Parameters@conus.army.mil