## Human Factors in War

The tools of warfare have grown technologically more sophisticated and complex, yet the constant in warfare remains the human element.[1] Technological advances have brought about hyperwar, cyberwar, and the military technological revolution.[2] Although technology has altered the means to conduct war and the nature of warfare, war is still a violent contest between thinking, acting, and reacting antagonists who seldom follow a completely rational or predictable course. War remains a *human enterprise*, which cannot be reduced to an engineering solution lacking uncertainty.[3]

The quantity and quality of information available to battlefield decision makers have increased significantly through technology. Nevertheless, war is still shaped by human inconsistencies, blurred by chance, and impeded by unpredictable human acts. In war, information, whether the purview of the commander in chief or the individual combatant, is plagued by doubt. Violence, danger, and chance combine to ensure information in warfare carries with it uncertainty. Uncertainty and the doubt which springs from it create a *fog* that affects the conduct of war.

From grand strategy to individual acts on the field of battle, war is the violent clash of human wills. Humans, with their sometimes irrational judgment, faulty logic, emotional bias, and other complexities, engage in warfare. Though surrounded by stealth systems, microwave weapons, and precision munitions, the human element remains prone to such physical and psychological effects of war as fear and physical exertion. The realization that decisions in war carry life or death consequences weighs upon the mental state of those in conflict.[4] The myriad of individual human qualities influencing the conflict contributes to the *friction* of battle. This friction distinguishes real war from war on paper.[5]

Enveloping the entire realm of war like an ether is *chance*. Chance rests upon the quirks of human behavior, the nature of the elements, imperfections in technology, and a host of other circumstances that cannot be divorced from warfare. Chance stands alone as an inevitable

element of warfare but simultaneously contributes profoundly to fog and friction. War occurs not in a vacuum but within the atmosphere of chance. Clausewitz wrote: "War is the realm of chance. No other human activity gives it greater scope. . . . Chance makes everything more uncertain and interferes with the whole course of events."[6]

War cannot be separated from the elements of fog, friction, and chance. The human dimension serves to ensure these elements remain dynamic and inexorably linked to warfare. Although chance, that ether surrounding all human events, has elements beyond human control, human actions can create and shape both fog and certain elements of friction. It is therefore vital to understand the nature of fog and friction.[7]

## Fog

Clausewitz described uncertainty, or the fog of war, as the chaos of opinions and considerations that arise and can fatally entangle judgment. Uncertainty "constitutes one of the most serious sources of friction in war, by making things appear entirely different from what one had expected."[8] Chance causes uncertainty through unexpected or unplanned results; inaccurate, incomplete, or contradictory information about enemy and friendly forces; and purposeful or chance actions of the enemy.[9] Fleet Marine Force Manual 1, *Warfighting*, observes that "by its nature, uncertainty invariably involves the estimation and acceptance of risk. Risk is inherent in war and is involved in every mission."[10] Yet estimation of risk suffers from psychological impediments that can result in surprise being achieved despite intelligence warnings.[11]

There are several levels of uncertainty in war. Such uncertainties as inherent errors in weapons accuracy, normal distribution of weapons effects, and the result of particular sorties are usually relatively minor. The uncertainties associated with the enemy are more important. One can never be positive that friendly forces have anticipated all enemy capabilities. Often even greater uncertainties are associated with evaluating enemy intentions (i.e., predicting which capabilities the

enemy will exercise, at what places, with which methods, and at what times). Intelligence preparation of the battlefield can reduce vulnerability to enemy actions, but the broader uncertainties of enemy intent normally remain unknowable with any degree of certainty.[12] The process of comparing enemy and friendly courses of action, known as the estimate of the situation, is a logical methodology for reducing risks, but the greatest value of this process may be that it arrives at a decision.[13] In the absence of strong leadership and professional judgment based on a thorough understanding of war, uncertainty can degenerate into utter confusion, paralyzing inaction, and chaos.[14]

Piercing the fog of uncertainty requires keen individual intellect to discern reality. It requires the clear interpretation of information to detect actuality amid the chaos of possibilities and the ability to anticipate and produce sound, logical decisions that extend beyond the uncertainties of the moment. Steering a steady, resolute course through a sea of confusion requires judgment and perception. Clausewitz termed war "the realm of uncertainty" where "three quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty."[15] To pierce this fog, Clausewitz pointed to the need for a sensitive and discriminating judgment—a skilled intelligence to detect the truth.[16]

Technology, more often than not, is seen as the answer to the fog of war. Technology can provide information to dispel the uncertainties. The Gulf War serves as an example of a high-technology conflict. Satellites and encrypted communications vastly enhanced information transfer within the theater and across the globe. Technological ability provided more accurate, more abundant, and more timely information to the war arena. To help in stripping away the uncertainty of information, technology now provides a vastly increased number of information channels to the battlefield. Although the Gulf War showed how technologies could facilitate warfare by providing high-quality information in great quantities, assuming that technology is an answer to the fog of war is dangerously misleading.

Reliable information appears to offer a seductive solution to the fog of war, but even information of the highest reliability cannot

strip away the fog. Although desirable, increased quality of information alone is not the solution. During the Gulf War, despite the exceptional technology and the excellent quality of raw data, the fog of war permeated the interpretation of what that technology and data had to offer.[17] Success depends not only on the quality of the information but also a blend of objective judgment, temperament, strategic vision, and intuition.[18] Clausewitz spoke of the ability to perceive truth but noted that "Truth in itself is rarely sufficient to make men act. Hence the step is always long from cognition to volition, from knowledge to ability."[19] Quality of information, although desirable and a necessary goal, is only as good as the decision it engenders. The talent to pierce the fog of war lies in the ability to distill from information considerations and options for prosecuting strategic vision without becoming entangled in the perceptions of the moment or the uncertainty of the decision.[20]

Technology can provide massive quantities of reliable information, which can clarify uncertainties, but it can also increase the fog of war. The ability to generate vast quantities of information and to access and manipulate this information can create a cascading information overload. Having to react to new information can overwhelm combatants and decision makers and multiply uncertainties.[21] People can accept and rationally process only a limited amount of information.[22] Eliot Cohen in "The Mystique of U.S. Air Power" observes that "the constant pressure of the data stream, together with the growth of nighttime operations, means that leaders try to keep on top of events at the cost of sleep and acuity."[23] Thus the strain upon the mental element is increased, adversely affecting intellect, the very essence of what is required to overcome the fog.

A strong intellect, resolute will, and strength of character are required to pierce the fog of war. Technology can help discern the truth of battle or serve to increase the fog—the outcome lies with the human element.

## Friction

According to Clausewitz, friction in war is "the force that makes the apparently easy so difficult" and distinguishes "real war from war

on paper."[24] "Countless minor incidents—the kind you can never really foresee—combine to lower the general level of performance" and lead to general friction.[25] General friction resulting from the physical environment is easy to see. Darkness; poor weather; terrain and geographic obstacles; degraded or limited command, control, and intelligence systems; complexities of organization and command relations; degradation of logistics, maintenance, and weapon systems; and chance cause this friction.[26] According to Clausewitz, two elements, danger and physical exertion, so aggravate the general friction problem that they may be considered among its principle causes.

As Clausewitz notes, "War is the realm of danger."[27] Danger usually produces fear, but "to someone who has never experienced danger, the idea is attractive rather than alarming."[28] Thus, action on the field of battle diverges from the plans laid in the security of staff offices. The manner in which action differs from plans depends upon the individuals involved and their reaction to the dangers present. Whether deemed prudent, courageous, brash, fool-hearted, or fearful, the act in battle is not as important for this discussion as the fact that danger will cause a human reaction that may differ from expected reactions.[29] Targets not struck due to heavy defenses, bombs missing the aim point because of defensive reaction, and acts of heroism are all human reactions to danger and contribute to the friction of war.

Fear, which is especially debilitating, results from battle loss rates, length of exposure to combat, intensity of battle, loss of comrades, and pessimism regarding personal survival. The human ability to prevail in the face of fear provides an immeasurable factor in the conduct of war. Richard Gabriel, in *The Painful Field,* wrote

> Technology, no matter how sophisticated or deadly, will mean nothing if men cannot withstand the storm of battle. Modern armies with their large staffs of technical experts tend all too readily to forget this lesson and to busy themselves with the details of "orchestrating" or "servicing" the battlefield through the employment of sophisticated technologies. They appear secure in the faith, historically quite unfounded, that soldiers can be made to do what the technology requires of them. Such military managers believe that today's soldier is somehow different from those who took the field in the past. What the lessons of the past ought to teach is that men

> break down in battle, technology notwithstanding. Man, not his machines, sets the ultimate limits on battle performance.[30]

Physical exhaustion resulting from the exertions of battle is the second aggravating cause of friction. Whether the task lies at the air base or in the cockpit, the physical demands of combat exceed the rigors of peace. The exhaustion imposed by the intensity of combat operations combined with extremes in climate, chemical protective clothing, unusual work schedules, unfamiliar food and surroundings, and a multitude of factors that affect the biological organism, aggravate the problem. The stresses of physical exhaustion and fear are compounded by uncertainty, by the inability to take aggressive action against the enemy, and especially by lack of confidence in leadership.[31] A veteran squadron commander wrote about these stresses at Guadalcanal, where living conditions were extremely primitive.

> There's one fact which I believe is not properly understood, and that is pilot fatigue. A man's "guts" is directly proportional to how rested he is—nothing more or less. . . . I think that about five days of intensive action is about all a man can stand; with interims I think he can last three weeks.[32]

Danger and exhaustion consist of not only the obvious physical aspects but psychological ones. Although the psychological aspects of friction result from the same causes as the physical aspects, the difference is the stress they create on combatants. This stress is produced by the interaction of combatants and the environment of war, which is characterized not only by violence and uncertainty but also by physical exertion and danger. Stress threatens the combat effectiveness of individual combatants, both leaders and followers, and the combat effectiveness of military organizations at all levels of war. War often presses combatants to their physical and mental limits, beyond which they succumb to battle fatigue.[33]

The symptoms of battle fatigue adversely affect the combatant's ability to function.

> The symptoms [of mild, nondisabling battle fatigue] included increased emotionality, sleep disturbances, fatigue, and exaggerated startled response

> to near or sudden movements or noises, and mild physical complaints. [The signs of psychological burnout were] apathy; slowness of thinking, moving, or responding; mild tremors . . .; decrease in the survival instinct; fixation on details; exaggerated aggressiveness; extreme exhaustion; vomiting or diarrhea; sleep disturbance; open fearfulness or phobias; pessimistic or fatalistic beliefs; social withdrawal or depression.[34]

Just as the combatants' effectiveness depends in large part on their understanding of the operating limitations of their equipment, commanders' effectiveness depends in large part on their understanding of the human limitations of their subordinates. This understanding should guide commanders' actions in organizing, equipping, and training their forces, and in such personnel policies as reconstitution, rest, reward, and punishment.[35] Understanding the human dimensions of friction is as vital as planning and orchestrating the battle. As Clausewitz notes, "The good general must know friction in order to overcome it whenever possible, and in order not to expect a standard of achievement in his operations which this very friction makes impossible."[36]

Clausewitz also offers a means to reduce friction. His "lubricant" is combat experience. Experience in the dangers and exertions of war reduce the friction of the inexperienced. Only those having experienced war can understand and appreciate the difficulties of combat. Short of combat experience, realistic training can reduce the friction of war. This training should include friction and allow chance to function. As Clausewitz notes:

> No general can accustom an army for war. Peacetime maneuvers are a feeble substitute for the real thing; but even they can give an army an advantage over others whose training is confined to routine, mechanical drill. To plan maneuvers so that some of the elements of friction are involved, which will train officer's judgement, common sense, and resolution is far more worthwhile than inexperienced people might think.[37]

Unit cohesion can also be seen to be a "lubricant" to friction. Understanding why soldiers fight is an essential first step to establishing forces that can sustain fighting power in combat.[38] In general, individuals do not fight for the same reasons that nations go

to war. Individuals fight because they willingly submit to authority and because of fear, pride, and loyalty, especially loyalty to comrades.[39] The relationship between comrades is especially important because fighting effectively depends on unit cohesion, which "is the ability of a military unit to hold together, to sustain mission effectiveness despite combat stress."[40] Unit cohesion can help the combatant overcome the fear and anxiety of combat.

Fighting power can be maintained by leadership that aids combatants in coping with combat stress caused by the fog, friction, and chance of war. Such leadership recognizes the value of realistic training, repetitious training, and overtraining. It provides the most stress-proof weapons and the best physical comforts possible (sleep, shelter, hot food). It builds and maintains cohesion.[41]

## Conclusion

With few exceptions, such as those in North Africa in 1942 and the southwest Pacific from 1941 to 1943, American air bases have not come under *sustained* attack. Consequently, in the Air Force the most adverse effects of combat have been confined to aircrews. There is, however, no reason to believe that the relative security and sanctuary of air bases can continue. To the contrary, it is most likely in the contemporary multipolar world that the Air Force will find itself engaged in regional combat from air bases within the reach of hostile threats. The Scud threat of the Gulf War likely foreshadows future combat with air bases subject to the constant possibility of enemy attack. Although it didn't materialize in the Gulf War, the threat of air attack with chemical weapons is also a likely possibility. The proliferation of weapons of mass destruction, the availability of ballistic missile technology, cruise missiles, precision guidance, and improved conventional and unconventional munitions make air bases increasingly vulnerable to the lethality of modern weapons, even in lesser developed regions of the world. Airmen should expect and be prepared for the adverse effects of war.

Uncertainty, danger, and physical exertion when combined with the violence and chance of war affect the human element. The resulting fog and friction can create stress and fear. Fog and friction, enveloped by chance, are interrelated and act as both cause and result. This interaction heightens their adverse effects. Ultimately, everyone involved with raising, organizing, training, or equipping armed forces, or in fighting a nation's wars should understand the human factors in war. Commanders especially must allow for the human dimension and the limitations imposed by fog, friction, and chance.

**Notes**

1. This does not deny that technology is intricately linked with war. Rather, it emphasizes that technology should serve war as war should serve political objectives. To ignore these relationships is to court failure. "We are in a technological age and there is every reason to believe that technology will exert an increasing influence on planning and conducting war. The future of war, however, depends on man, not technology." Lt Col Clayton R. Newell, "The Technological Future of War," *Military Review*, October 1989, 22; see also Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939–1945* (Westport, Conn.: Greenwood Press, 1982), 167. For a short discussion of the relationship of war and technology, see Russell F. Weigley, "War and the Paradox of Technology," *International Security*, Fall 1989, 192–202. For a discussion of joint doctrine as it concerns the human element and technology refer to Joint Pub 1, *Joint Warfare of the US Armed Forces*, 11 November 1991, 2–4.

2. The term *hyperwar* describes the concept of achieving near-instantaneous paralysis of the enemy's war-fighting capabilities. The ability to conduct hyperwar is attributed to the increased effectiveness of strategic air warfare due to technological advances. Gen Michael J. Dugan was one of the first to use the term. For further discussion, refer to Col Dennis Drew, "Hyperwar Merely an Old Wine in New Bottles," *Air Force Times*, 6 May 1991, 19; and Casey Anderson, "Hyperwar Success May Alter AF Doctrine," *Air Force Times*, 22 April 1991, 18. Also, see "Hyperwar," *Bulletin of Atomic Scientists* 48, no. 7, September 1992, 14. The term *cyberwar* as described by John Arquilla and David Ronfeldt in "Cyberwar is Coming" (Santa Monica, Calif.: RAND, P-7791, 1992) "refers to conducting, and preparing to conduct, military operations according to information-related principles. It means disrupting if not destroying the information and communications systems . . . on which an adversary relies in order to know itself. . . . It means using knowledge so that less capital and labor may have to be expended." For further information on cyberwar also refer to V. I. Postrel, "Cybernetic War," *Reason*, no. 4 (April 1991):

22. For a study of the military technological revolution, refer to the final report of Michael J. Mazarr, Jeffrey Shaffer, and Benjamin Ederington, "The Military Technical Revolution—A Structural Framework" (Washington, D.C.: Center for Strategic and International Studies, March 1993).

3. Concluding his discussion of the "American propensity to see war as an engineering science," Lt Col Barry Watts states, "The impulse to believe that war can be reduced to engineering formulas and calculations has continued to dominate not just within the Air Force, but throughout the American defense community as well." Barry D. Watts, *The Foundation of US Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, December 1984), 47; see also pages 93 and 105–21. This point is reiterated by S. L. A. Marshall, *Men against Fire: The Problem of Battle Command in Future War* (Gloucester, Mass.: Peter Smith, 1978), 23.

4. Gen H. Norman Schwarzkopf is a recent example of the concern combat commanders feel toward those they command. Rick Atkinson in *Crusade: The Untold Story of the Gulf War* (New York: Houghton Mifflin Co., 1993), 71, makes the point that "the prospect of sending men to their death seemed almost to unhinge him [Schwarzkopf]." The consequences of violence are not the only constraints on rationality in war. War also has the characteristics of crisis management in that decisions are limited by time and by the amount of information that can be processed in the available time. Consequently, decisions made and courses of action selected may differ considerably from those that would be made if the situation allowed for unlimited time to gather and analyze relevant information. Prosecuting war requires a timeliness of decision making. This point is expanded in Fleet Marine Force Manual (FMFM) 1, *Warfighting,* 6 March 1989, 68–70.

5. Carl von Clausewitz, *On War,* ed. and trans. Michael E. Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 119.

6. Ibid., 101.

7. It is also vital to understand that these elements are manifestations of the human dimension, not elements which can be reduced to concrete mathematical formulae or computer models. Although these elements can be factored into simulation and accounted for by probability, such attempts can only provide descriptive results rather than prescriptive ones. See also Martin van Creveld, *Technology and War: From 2000 B.C. to the Present* (New York: Free Press, 1989), 246. Regarding the reduction of war to mathematical equation van Creveld states:

> Since intuition was to be replaced by calculation, and since the latter was to be carried out with the aid of computers, it was necessary that all the phenomena of war be reduced to quantitative form. Consequently everything that could be quantified was, while everything that could not tended to be thrown onto the garbage heap. Among the things that

were discarded in this way were precisely those factors that make war what it is.

8. Clausewitz, 121. James Gleick in *Chaos: Making a New Science* (New York: Viking Press, 1987), suggests an order to chaos. Gleick's in-depth illustrations and explanations make it clear that nature is highly complex and frequently only appears to be chaotic. Patterns now discovered across all fields of science indicate that chaos is extremely structured and subject to an emerging set of natural laws. The application of this knowledge to meteorology and electronics may lead to breakthroughs for vastly improved weather prediction capabilities and data transmission capability. This is not to suggest that this same science applies to the chaos created by interactive human behaviors. The sometimes irrational, unpredictable nature of the human mind continues to defy prediction and quantification. Thinking, acting, and reacting human intellects will maintain chaos as a primary element of combat despite better understandings of the order of nature. See also FMFM 1, 8–10.

9. Clausewitz, 101–02. FMFM 1, *Warfighting*, 4, points to the dynamic nature of the environment by stating that "It is critical to keep in mind that the enemy is not an inanimate object but an independent and animate force. The enemy seeks to resist our will and impose his own will on us. It is the dynamic interplay between his will and ours that makes war difficult and complex." Also refer to FMFM 1, chap. 1.

10. FMFM 1, 7.

11. Richard K. Betts, *Surprise Attack* (Washington, D.C.: Brookings Institution, 1982), 289–96.

12. Maj Gen Howard M. Estes Jr., "On Strategic Uncertainty," *Strategic Review*, Winter 1983, 36–43, discusses types of military uncertainty. Watts (see note 3 above) argues that the prevalent tendency to view war as mechanical and predictable is flawed and militarily dangerous. Recent mathematical theory indicates that numerous natural processes are fundamentally uncertain, although the ranges of uncertainty vary between examples. These additions to mathematical theory have been taken to overthrow the notion that, if only one had enough information, complex processes and events might become predictable; an accessible study is Gleick.

13. O. G. Haywood Jr., "Military Decision and Game Theory," *Journal of the Operations Research Society of America*, November 1954, 365–85, explains that the estimate of the situation embodies a conservative solution of least risk (rather than seeking maximum gain without consideration to risk) in terms of John Von Neumann's games theories. Haywood proposes a matrix approach to compare enemy and friendly courses of action. Lt Gen Philip D. Shutler presents several such matrices in "Thinking About Warfare," *Marine Corps Gazette*, November 1987,

18–26. A more dynamic discussion of dealing with uncertainty and decision in battle is Col John Boyd's observation-orientation-decision-action (OODA) theory. The OODA cycle is from Colonel Boyd's "asymmetric fast transient" theory of conflict. Col John Boyd, "Patterns of Conflict," slide briefing given to the Air Command and Staff College, Air University, Maxwell AFB, Alabama, 1979. Slide 109 includes the following statement:

> Observe, orient, decide, and act *more inconspicuously, more quickly*, and with *more irregularity* (or fluidity) as basis to keep or gain initiative as well as to repeatedly and unexpectedly focus main effort thru [sic] vulnerabilities and weaknesses exposed by that effort or other effort(s) that tie-up, divert, or drain away adversary attention (and strength) elsewhere [emphasis in original].

Other more available sources that discuss the OODA loop and the asymmetric fast-transient theory are Maj James M. Simpson, "Doing Things the Same or Differently: An Alternative Approach to the Study of Conflict," *Air University Review* 31, no. 4 (May–June 1980): 88–93; and for a discussion of the OODA theory in an estimate of the situation and preparation of operations orders to implement the commander's decision, see Capt Kevin B. Smith, "Combat Information Flow," *Military Review* 69, no. 4 (April 1989): 42–54.

14. Throughout *Command in War*, Martin van Creveld reinforces the assertion that uncertainty dominates command. Manning, equipping, training, feeding, housing, and transporting forces may be difficult enough, but it is the uncertainty, the fog of war, that really complicates the mission of commanders in pursuing military objectives. van Creveld, *Command in War* (Cambridge, Mass.: Harvard University Press, 1985). For a short condensation of the essentials of what "really matters in war," see the 1936 German army's "Command of Troops," in van Creveld, *Fighting Power*, 28–29.

15. Clausewitz, 101.

16. Ibid.

17. Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 244.

18. Clausewitz, 112.

19. Ibid.

20. Atkinson.

21. Eliot A. Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs*, January/February 1994, 113.

22. Alvin Toffler, *Future Shock* (New York: Random House, Inc., Bantam Books, 1971), 351.

23. Cohen, 114.

24. Clausewitz, 121.

25. Ibid., 119.

26. Ibid., 115–21; and FMFM 1, 4–7. Watts, passim, is especially useful in understanding friction in relation to air power.

27. Ibid., 101.

28. Ibid., 113.

29. Atkinson, 75.

30. Richard A. Gabriel, *The Painful Field: The Psychiatric Dimension of Modern War* (Westport, Conn.: Greenwood Press, 1988), 23.

31. Brian H. Chermol, "Wounds without Scars: Treatment of Battle Fatigue in the U.S. Armed Forces in the Second World War," *Military Affairs*, January 1985, 1–11; and Comdr John R. Cusack, "Unseen Wounds: Psychiatric Casualties in Combat," *Marine Corps Gazette*, August 1988, 80. For the impact of combat on aircrews, see Lord Moran, *The Anatomy of Courage*, 2d ed. (Garden City Park, N.Y.: Avery Publishing Group, Inc., 1966), 97–107; and Irving L. Janis, "Morale Attitudes of Combat Flying Personnel in the Air Corps" and "Objective Factors Related to Morale Attitudes in the Aerial Combat Situation," in *The American Soldier: Combat and Its Aftermath*, ed. Samuel A. Stouffer et al. (New York: John Wiley and Sons, Inc., 1965), 324–410.

32. Col John Howard McEniny Jr., *A Marine Dive-Bomber Pilot at Guadalcanal* (Tuscaloosa, Ala.: University of Alabama Press, 1987), 86–7.

33. Gabriel, 25–45; and Clausewitz, 113–16.

34. Chermol, 10. In World War II battle fatigue "was a frequent cause of temporary removal from flight status and was the most common cause of permanent removal from flight status." Chermol, 11, notes:

> Some [battle fatigue] symptoms peculiar to aviators were air sickness, phobias concerning types of aircraft or missions, curtailment of flights or abortment of missions due to overconcern with aircraft performance or personal health, preflight anticipatory anxiety, vertigo, selective loss of hearing or vision in the absence of physical damage, and loss of appetite.

35. For the relationship of leadership and the nature of war, see Clausewitz, 100–112.

36. Ibid., 120.

37. Ibid., 122.

38. For a bibliographical essay on why soldiers fight, see Col Wm. Darryl Henderson, *Cohesion: The Human Element in Combat* (Washington, D.C.: National Defense University Press, 1985), 161–66.

39. William T. Hauser, "The Will to Fight," in *Combat Effectiveness: Cohesion, Stress, and the Volunteer Military*, ed. Sam C. Sarkesian (Beverly Hills, Calif.: Sage Publications, 1980), 188–95; and Gabriel, 130, 161–62.

40. Ibid., 204; see also Henderson, 4; and John H. Johns et al., *Cohesion in the US Military* (Washington, D.C.: National Defense University Press, 1984). For a comparison of American and North Vietnamese cohesion in the Vietnam War, see Henderson, *Cohesion*; and Henderson, *Why the Vietcong Fought: A Study of Motivation and Control in a Modern Army in Combat* (Westport, Conn.: Greenwood Press, 1979).

41. Peter Grier, "Beating the Flinch Factor," *Military Forum*, November 1988, 37–40. For a discussion of building cohesion, see John H. Johns and Capt R. A. D. Applegate, "Why Armies Lose in Battle: An Organic Approach to Military Analysis," *RUSI Journal* (Royal United Services Institute for Defence Studies), 4 December 1987, 50–54.