

HOW TO MAKE WAR

• FOURTH EDITION •

A COMPREHENSIVE GUIDE TO MODERN WARFARE
IN THE 21ST CENTURY



JAMES F. DUNNIGAN

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How to Make War

**A COMPREHENSIVE GUIDE
TO MODERN WARFARE IN THE
TWENTY-FIRST CENTURY**

Fourth Edition

JAMES F. DUNNIGAN



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Foreword to the Fourth Edition

The first edition of *How to Make War* was published 20 years ago, during the last decade of the Cold War. A lot has changed since then. The Cold War ended, lots of little wars sprang up, and the ideas about what war is have changed considerably. A lot of these new ideas have less to do with politics than with technology. The last time this happened was during the two decades between World War I and World War II. Back then everyone was trying to figure out what effect new weapons like tanks and warplanes, and new technology like electronics and operations research, would have on warfare. The changes were enormous, and it was nearly 50 years before another such revolution began to emerge. This is called a “revolution in military affairs,” and its extent and impact is not yet known. I’ll be providing a lot of information on this revolution, where it came from, what it is at the moment, and where it may be going.

While the revolution in military affairs of the 1920s and 1930s was known for things like mechanized warfare, strategic bombing, electronic warfare, and carrier aviation, the current revolution in military affairs features things like robotic weapons, information systems, and space-based communications and reconnaissance. Welcome to the twenty-first century.

There are lots of changes in this edition, including some new chapters, many rewrites, and new illustrations. As I always enjoy hearing from readers, and carefully consider the comments, you will find several items changed as a result of reader feedback. Modifications are not radical, but incremental. Things change, this book shows it, and it is better for these evolutions. I can be reached via e-mail at jfdunnigan@aol.com, or at jim.dunnigan.com. You can also find updates to *How to Make War* at strategypage.com.

Illustrations are taken from various U.S. Department of Defense and U.S. government sources.

As with previous editions, I am indebted to a number of people for their advice and criticism of the manuscript. Among these are Austin Bay, Albert Nofi, Ray Macedonia, Mike Macedonia, Dan Masterson, Steve Cole, Adam Geibel, Mike Robel, Stephen B. Patrick, Bill Gross, Dave Tschantz, Mark Herman, and many others too numerous to mention (especially the attentive readers on strategypage.com).

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How to Become an Effective Armchair General

With the proliferation of smaller and often more politically complex conflicts, it is becoming more difficult to make sense of wars. The end of the Cold War also has focused more attention on these smaller wars. Yet you can better understand a complex issue like war if you know the details and how they fit together. Warfare is certainly complex. With the spread of nuclear, chemical, and biological weapons, war and terrorism are becoming a more immediate fear in our lives. Still clouded by obscurity and confused by myths, the process of warfare is misunderstood by most of us. The mass media helps create and perpetuate many myths. Often the appointed experts are equally ill-informed.

When a war breaks out, these myths gradually become apparent as distortions. Operating on these misunderstandings, leaders and citizens are much more likely to get involved in wars, or make ones they have forced on them even more expensive. One of the constants of history is that a nation rarely goes to war until it has convinced itself that victory is attainable and worth the cost. In reality, warfare is never worth the cost for those who start them. Instigators of wars invariably come to regret it. Those who resist aggression have a better case. Yet avoiding war typically leaves people feeling they have missed a golden opportunity to right some wrong. Real warfare is ugly, destructive, and remembered fondly only by those who survived it without getting too close. Time dims our memories and conjures up wishful myths. This book removes some of the obscurity and destroys a few of the myths.

The Principles of War

Understanding how the military mind operates requires familiarity with the central “truths” military commanders have learned over the centuries. These principles of war have been distilled from our long history of warfare. They reflect reality. Were they followed to the letter, there would probably be a lot less fighting. The principles of war preach, above all, that you must know what you are doing. Or at least know your business better than your opponent. These principles are codified, and applied, somewhat differently from nation to nation, but the following describes the more common and important ones as I define them.

Mass. This is best summed up by the old American saying “Get there first with the most.” While superior troops can enable you to fight outnumbered and win, victory usually goes to the side that masses the most combat power on the battlefield.

Unity of command. Armed forces have always been large organizations and usually larger than one leader can command and control. This principle warns the leader to make arrangements to deal with different parts of the armed forces operating at cross purposes with one another. All the units should know and be ready to execute the same plan, or take previously arranged actions if the plan doesn’t work as expected. This principle has always been one of the most difficult to practice.

Maintenance of the objective. This means choosing and sticking with a reason for being on the battlefield. In warfare, the commander regularly operates with very little information about what is going on. As the situation develops, there is a temptation to change objectives. This wastes time and energy. History has shown that the army that consistently pursues its original goal is likely to succeed. An example is found in the Arab-Israeli wars. The Israelis ruthlessly maintained their objectives, ignoring temptations to surround bypassed Arab formations. This straightforward attitude always resulted in the destruction of far larger Arab forces. By contrast, the Egyptians, in 1973, changed their plan after crossing the Suez Canal. Instead of digging in to receive the Israeli counterattack, they launched further attacks of their own. This resulted in heavy Egyptian losses, which set the stage for a successful Israeli crossing of the canal.

Economy of force. Otherwise known as not putting all your eggs in one basket. No one ever has enough resources to accomplish everything. Economy of force dictates carefully parceling out forces for each phase of the operation. This does not mean using nothing but small forces all over the place. For key opera-

tions, you will often need massive forces. These are obtained only by using as little as possible everywhere else. Most important is the maintenance of a large reserve, some units that are kept out of the battle to deal with unanticipated emergencies. If nothing else, once all your committed forces get hopelessly tangled up, you will still have control of the reserve. Invariably the reserve snatches survival from the jaws of disaster. During World War II, the German army maintained a reserve no matter how desperate the situation. This habit alone may have prolonged the war by at least a year. Economy of force also allows you to mass sufficient combat power where it will do the most good.

Flexibility. This may seem a contradiction of the maintenance-of-the-objective principle, but it isn't. Flexibility in planning, thought, and action is otherwise known as common sense. Maintenance of the objective does not imply ignoring the obvious. If your orders are to take a town, and you determine that the easiest way to do this would be to surround it and then attack it from all sides instead of charging right in, that's being flexible. If, while moving around the town, you discover that a larger relief force is coming to support the enemy troops in the town, you would go after this new relief force before it could unite with the enemy forces in the town. After the relief force is defeated, you can go back after the town. That's being flexible and maintaining the objective at the same time.

Initiative. Getting there first with the most and taking advantage of the situation is the principal quality of the combat leader, and not all of them have it. Being first off the mark most of the time leaves the other fellow with less opportunity to respond to your moves and plans. Defeat is the likely outcome for a commander who always waits for something to happen. Indeed, surprise is little more than an enormous disparity in initiative between two forces.

Maneuver. If you don't move your troops around, then you can, at best, achieve a stalemate. This may be sufficient, but victory is better, and often necessary. To win, you must outmaneuver your opponent, or cause your opponent to try some fancy maneuver that turns into a disaster. Maneuvering is always dangerous, as the other fellow may turn out to be better at it. For this reason, many otherwise able commanders fail in battle because they do not have the proper mind-set for maneuver warfare. They are not willing to take risks. Successfully moving troops around in battle is the pinnacle of military art and the usual precursor of victory.

Security. It's not sheer bloody-mindedness that causes captured spies to be shot in wartime. Information can usually be calculated in lives saved or lost. If you know what the enemy is up to while concealing your own plans, your chances of success increase immensely. The crucial Battle of Midway in 1942 was won

largely because the United States knew of Japanese plans, from having broken their codes, while the Japanese knew little of the U.S. forces' deployment, nor that the Americans were reading their coded messages. Good security capability enables you to achieve the most crucial of combat advantages: surprise.

Surprise. One of the earliest lessons soldiers learn is that it's a lot safer, and potentially more successful, to hit the other guy when he's not expecting it. That's what surprise is, and that's why security is also a principle of war.

Simplicity. Warfare is a chaotic and unpredictable undertaking. Elaborate plans quickly come apart under the stress of combat. Large, elaborate, and complex military organizations do require some planning to keep them going. It's not easy to keep the procedures simple. The key is the quality of your leaders and their ability to do the right thing in unison. Good leaders are another scarce resource. It's no easy thing waging war.

Morale. This is not generally considered one of the principles of war, but morale has always been one of those crucial items that overrule all others. Often taken for granted until it's too late, morale is the attitude of the officers and troops. It is generally much higher at the beginning of a battle than during and after. Once morale declines to a certain point, the troops lose their desire to fight. If this breaking point is reached during a battle, the side suffering from it loses.

Entropy. This is also not generally considered one of the principles of war, but entropy has been a constant throughout military history. In practice, entropy means that after an initial shock, the war or battle will settle down to a steady grind. Once a war gets started, casualty and movement rates become predictable. In combat, personnel losses can average up to a few percent a day per division. Against enemy opposition, even mechanized forces rarely advance farther than some 20 kilometers a day. There are exceptions, and the exceptions may win battles. Over the course of an entire war, however, entropy takes over. A technical way to put it is that "events tend to regress toward the mean." Don't let flashy press reports fool you; exceptions tend to get published far more than day-to-day averages. Commanders who are best able to cope with entropy develop a more realistic, and winning, attitude.

Rules of Thumb

As crass as it might seem, it is possible to boil this book down to a dozen rules of thumb on "how to make war." These are the historical outcomes that consistently repeat themselves.

An armed force's strength is calculated by multiplying numbers of men, weapons, munitions, and equipment by the quality factor. Quality is a seemingly nebulous thing, but it includes the effectiveness of leadership, training, morale, weapons, and equipment. Numbers alone are not the standard by which you can calculate a nation's combat strength. Units with equal numbers of men and equipment can vary substantially in terms of combat effectiveness. In other words, a soldier of one army can be worth several of another. It is also assumed that the armed forces in question have the proper ratios of infantry, tanks, aircraft, artillery, ships, trucks, etc. This is often a rash assumption, because the force with a higher quality rating possesses proportionately more weapons and equipment.

Attack strength ratios. An attacker needs three or more times as much combat strength (not just troops and weapons) in order to overcome a defender at the point of attack. This varies with the size of the forces. At the platoon level, the required ratio can go as high as 10:1. At the theater level, where up to a million or more troops are involved, anything between 1:1 and 2:1 will often suffice because only a small part of the terrain in the theater will be fought over at any one time. You also have to take time into account. The larger the advantage, the less time it will take to win. Keep in mind that the historical record from the last century has shown some armies with troops six or more times effective than their opponents. There have been smaller wars where the ratio is even larger. Remember, it's not the number of troops that count, but combat power (number of troops times the quality factor).

Climate and terrain have a severe effect on the tempo and effects of combat. Rough terrain, darkness, and winter all slow down operations and reduce the casualty rate from combat, while increasing the losses from disease and sickness. The cumulative effects can slow down operations by over 50 percent and reduce casualties even more. Chemical weapons have the same general effect as bad weather, although with a slightly higher casualty rate. Flat, open terrain speeds up operations, particularly if the defender cannot put up substantial opposition. Such conditions can also reduce attackers' losses while enormously increasing those of the hapless defender.

Modern ground combat causes average losses of 1–5 percent casualties per day of sustained combat per division (of 10,000–20,000 troops). Losses vary enormously depending on the soldiers' jobs. The infantry units' casualty rate is two to three times the overall rate. Tank-unit losses are about the same as the overall rate. Artillery units suffer half the overall rate, and all other troops are lost at about one-sixth the rate of the division as a whole. Keep in mind that smaller combat units like battalions will have over 50 percent of their strength exposed to enemy fire, while a larger unit like a division will expose only

10–15 percent. You don't have to be a mathematician to figure out that a battalion will have a much higher rate of loss than a division. If you have enough of a numeric and quality edge over your opponent, as did the United States over Iraq in 1991, your losses will be even lower.

Combat vehicles (tanks and personnel carriers) are lost in combat at a rate of 5–10 times the personnel loss rate. If a division loses 2 percent of its troops a day in battle, it will lose over 10 percent of its armored vehicles. Highly mechanized forces tend to grind to a halt over time as their equipment breaks down. Low-tech forces can continue killing each other longer without being stopped by equipment failure. When low-tech troops (such as the Afghan resistance in the 1980s) engage high-tech troops (such as the Soviets), the low-tech force can keep going a lot longer on fewer resources. This is why guerrilla warfare is so difficult for a high-tech force, and why most of the wars in the twenty-first century will be resistant to high-tech solutions.

The ratio of dead to wounded is about 1:4 in most armies. This varies according to how much medical resources you have. Armies with substantial medical resources get the ratio up to 1 dead for 5–10 wounded. Most of the wounded can be returned to service in less than a month. Noncombat losses per month vary from 1–40 percent depending on living conditions, climate, and medical facilities available. Wars in the twenty-first century will generally be in unhealthful places. Noncombat losses are liable to be higher than combat losses.

All things being equal, defending is easier than attacking. This is especially true if the defender is within fortifications that the attacker cannot bypass. By defending, a force doubles or triples its combat power. A stalemate can be achieved if both sides are too strong for the other to attack. World War I was a classic example, and many other campaigns in the past century suffered from this problem. Guerrilla wars often end up as stalemates. This favors the guerrillas, as the other side is usually spending a lot more money and will go broke first.

Modern air combat causes losses averaging 1–5 aircraft lost per 1,000 sorties. The American experience in Vietnam and the Soviet record in Afghanistan demonstrated that noncombat losses amount to between 1–5 percent of all aircraft per month. If you manage to shut down the enemy air defenses right away, as happened in the 1991 Gulf War, you can get the losses down to less than one per 1,000 sorties (it was about .4 per 1,000 sorties in the 1991 Gulf War and none in the 1999 Kosovo campaign).

Naval warfare consists mostly of nations dependent on maritime trade protecting their merchant shipping, or preventing the enemy from using theirs. Naval warfare is largely a defensive exercise, more so than air or ground combat. The

Gulf War was yet another example of this, with allied naval forces shutting down Iraqi ports. The allied naval forces then had to devote considerable resources to protecting themselves from possible Iraqi air or missile attack.

Surprise in battle can increase one side's combat power by a factor of three or more. The effect wears off after one to three days. This is one of the key factors in battlefield success and is regularly underestimated or ignored.

Troops that have not been in combat, or have not undergone intensive and realistic training, underestimate how much time, effort, and casualties it will take to accomplish anything in battle. It is very difficult to break out of this habit. For most armies, only combat experience will provide a realistic attitude toward warfare. A welcome exception was the experience of U.S. forces in the Gulf War. America had spent millions of hours and billions of dollars on realistic training exercises. This preparation was close enough to real warfare to make the operations against Iraq highly successful. One aspect of this that went unnoticed by the American public was that U.S. ground troops, because of their intense and realistic training over the years, knew how to make use of the months of time spent in the Saudi Arabian desert. Here they perfected their techniques with more training on the local terrain and detailed rehearsals for the advance north. As the U.S. experience in World War II demonstrated, spending a lot of time on inappropriate training is counterproductive when the shooting starts.

Warfare is expensive. Depending on how wealthy a nation is, and how many weapons and munitions it can buy, each enemy soldier killed can cost from several thousand to several million dollars. Just moving a lot of troops to an area where there might be a war, but none occurs, can cost billions of dollars. There's no such thing as a cheap war.

How to Find the Right Questions

Warfare, to put it bluntly, is just a job. There are techniques the successful practitioners must learn and tools they must master. As in any other profession, conditions change constantly. Practitioners must adapt to these changes by answering correctly the questions raised by changed conditions. But warfare cannot easily be practiced. This makes it difficult to determine the important questions, much less the answers. Here are some of the ones that are raised in this book.

How many armed forces do we need as we enter the twenty-first century? Not a whole lot. After finishing the analysis of the world's armed forces (at the end of the book), it becomes clear that there are no other nations powerful

enough or angry enough to drag the United States into a major war. The world is a more peaceful place (in relative terms) than it has been in over a century. One of the benefits of the Cold War was the unity created among the industrialized nations (the "West," which includes several Asian states). In previous centuries, the major powers were always at odds with one another, and often at war as well. The Cold War and its nuclear stalemate changed all that. Thus, it is not up to the United States alone to take care of military emergencies threatening many other nations as well as the United States. If America had not promptly responded to the Iraqi invasion of Kuwait in 1990, the other industrialized nations had more than sufficient military means to go there and sort things out. They would not have been able to do it as expeditiously as the United States, but the matter would have been cleared up. Before World War II, the United States spent about 2 percent of gross national product on defense. That is a two-thirds of what is being spent now. Could we go back to that level? Voters must study the matter and decide.

What were the lessons of the Gulf War? The principal lesson was that training pays large dividends. U.S. troops underwent unprecedented (for peacetime American forces) training during the 1980s. Moreover, the troops were now all volunteers and carefully selected. This has been the traditional method of creating a highly effective armed force. The Iraqis were largely an army of ill-trained, -led, and -motivated conscripts. These training and troop quality factors, not superior equipment, were what made the victory so lopsided. The lesson yet to be learned is if the U.S. armed forces will choose to maintain their training levels or, as has happened during the 1990s, cut back training in favor of developing and producing new equipment. The choice is hard, as U.S. defense budgets always suffer considerable shrinkage when a war ends. There were several other lessons from the Gulf War. Some of the more prominent ones were:

Spare parts and munitions were not at "big war" levels. The Gulf War was a medium-size short war, and if it had gone on much longer, there would have been embarrassing shortages of spare parts and munitions. This situation got worse during the 1990s and only started to get fixed after the 2001 war on terrorism got started.

Combat service support was not up to wartime standards. Although U.S. Army doctrine had preached maneuverability for over a decade, there were not enough trucks available to support it. Last-minute scrounging to improvise sufficient transportation was still not able to prevent supply shortages once the three-day ground offensive got under way. This problem was never fixed.

The Navy floats better than it fights. The U.S. Navy was revealed to have overlooked some key technologies during its 1980s expansion. The U.S. Air Force had a superior bombing technology that the Navy knew about but had declined

to get involved with because of the expense, and the feeling that the Navy way was the right way. This can be seen as either good news or bad news for inter-service rivalry. The good news is that while one service took the wrong path, the Air Force went another way that proved more efficient. The bad news is that the United States had two quite independent air forces, one operating from land and another from carriers. In any event, one of them got it right. The Navy has since adopted a lot of the Air Force technology.

Massive amounts of money spent in peacetime can save lives. The low U.S. casualty rate in the Gulf War was a direct result of the money spent on training and equipment during the 1980s. This spending was cut back in the 1990s, but no major war came along to show how this increases casualties. This pattern of post-victory cutbacks is ancient. There's a pragmatic reason for this: defense spending, no matter how essential, hurts the economy. Non-defense spending builds the economy and provides more jobs. A run-down economy and unemployment cause lower living standards, increased disease, and shorter life spans. It's always been tough getting money for the troops in peacetime, and always will be.

You can't see everything from the air in the desert. As spectacular as the Air Force performance was in the Gulf War, it was a typical experience for an air force in a desert. Yet the Air Force was stymied in finding and stopping the Scud missile attacks, or even hitting a lot of targets it thought it had hit. This has dire consequences for future war as missile technology continues to spread. More potential enemies will have missiles and exotic warheads (chemical or nuclear), which means that not finding a few missiles can lead to large losses. The large gap between what the warplanes thought they hit, and what they actually hit, was seen again in the 1999 Kosovo campaign.

Gee, that was easy. No, it wasn't. The chapters on combat and logistics show that the conditions under which the Gulf War was fought were unique. Change those conditions a little and you can change the results a lot.

What does war cost? Are you appalled by the size of this year's defense budget? With annual worldwide arms spending still in the neighborhood of \$800 billion, you have plenty of company. The end of the Cold War did not bring about as much of a cut in defense spending as many people thought. Worldwide, spending only went down about a third by 1998. After that, spending began to rise again. But there are still wars, and wars are not getting any cheaper. The chapters on combat operations rate the relative worth of the various weapons bought. Chapter 23, on logistics, gives more details on the material needed to carry on a war. Using the chapters on the cost of war, logistics, and attrition (Chapter 24), you can do your own calculations on the cost of a current or a future war (Chapter 25). Although the cost of war is not frequently

mentioned in the press, governments are well aware of it. This cost is a major element in the decision to wage war or to seek a less expensive means of achieving national goals. These chapters explain why modern wars are either short or eventually bankrupt the participants. The Iran-Iraq war is a good example of a "war of bankruptcy." And even the 1991 Gulf War cost the winners \$60 billion, and the losers much more.

What entity controls two-thirds of the planet? The U.S. Navy does, as 75 percent of the world's surface area is water and most of that is international waters, where the strongest naval power holds sway. The U.S. Navy is now more powerful than all the other navies of the world combined. No likely combination of foreign navies can challenge the U.S. Navy. Not now, not for the rest of the century. Chapters 9, 10, 11, and 26, on naval power, explain why and demonstrate how the growth of the U.S. Navy since before World War II has resulted in the ultimate victory at sea.

Is the threat of nuclear war increasing? Chapter 20, on strategic nuclear weapons, reveals a few surprises about what might happen: for example, use of ICBMs (Intercontinental Ballistic Missiles) with nerve-gas warheads. What probably won't happen is the end of the world. The reasons? Primarily fear of massive use of the weapons and the unlikelihood that the weapons will actually work. Yet anything is possible. Read and study the details and decide for yourself. The chapters on nuclear weapons point out a number of factors influencing weapons reliability and effects that are not normally published in the open press. Nuclear weapons may well be used in the future, but not in ways we currently anticipate. Read Chapters 19, 20, and 21, and draw your own conclusions.

Who's on first in Europe, the Middle East, Africa, and Asia? Chapter 29, on the armed forces of the world, puts this topic into perspective. The information on each nation's armed forces indicates the potential resolution of such conflicts. Other chapters can be consulted to gain a more complete understanding of the possible outcomes. All countries have armed forces, but not all have an effective military organization. Except for the top ten military nations in the world, effective offensive warfare is not a realistic possibility. Iraq thought otherwise, and look what happened to it. The most pressing danger is that more militarily competent countries will be drawn into a local squabble. With the information contained in this chapter you can quickly assess who might do what to whom.

Who gets hurt? In modern warfare, few people in the combat zone are exposed to enemy fire, and fewer still actually fight. They rarely even see an enemy soldier, except as a corpse or a prisoner. The sections on ground, naval, and air combat demonstrate this in detail. These sections also add accurate detail to frequently misleading news accounts of combat. How are current wars being fought? The chapters on various aspects of military operations give details not ordinarily found in other sources. The chapters on the human factors are also crucial, as these items are repeatedly ignored or misinterpreted.