

Conventional Forces

The bargaining power of states depends not only on the overall size of their military forces but on the particular capabilities of those forces in various scenarios. State leaders almost always turn to conventional military forces for actual missions, reserving weapons of mass destruction for making or deterring threats.

If a leader decides that an international conflict could be more favorably settled by applying military force, it matters a great deal whether the application involves bombing another state's capital city, imposing a naval blockade, or seizing disputed territory. Armed forces can apply negative leverage at a distance, but various types of forces have evolved over time for different situations and contexts—on water, on land, or in the air. They match up against each other in particular ways. A tank cannot destroy a submarine, and vice versa.

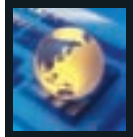
Whatever their ultimate causes and objectives, most wars involve a struggle to *control territory*. Territory holds a central place in warfare because of its importance in the international system, and vice versa. Borders define where a state's own military forces and rival states' military forces are free to move. Military logistics make territoriality all the more important because of the need to control territories connecting military forces with each other. An army's supplies must flow from home territory along *supply lines* to the field. In the 2003 Iraq War, a major challenge for U.S. forces was to secure supply lines hundreds of miles into Iraq. Thus the most fundamental purpose of conventional forces is to take, hold, or defend territory.

Armies

Armies are adapted to this purpose. Infantry soldiers armed with automatic rifles can generally control a local piece of territory. Military forces with such a presence *occupy* a territory militarily. Although inhabitants may make the soldiers' lives unhappy through violent or nonviolent resistance, generally only another organized military force can displace occupiers.

Foot soldiers are called the **infantry**. They use assault rifles and other light weapons (such as mines and machine guns) as well as heavy artillery of various types. Artillery is extremely destructive and not very discriminating: it usually causes the most damage and casualties in wars. Armor refers to tanks and armored vehicles. In open terrain, such as desert, mechanized ground forces typically combine armor, artillery, and infantry. In close terrain, such as jungles and cities, however, foot soldiers are more important.

Land mines are simple, small, and cheap containers of explosives with a trigger activated by contact or sensor. These mines were a particular focus of public attention in the 1990s because in places such as Angola, Afghanistan, Cambodia, and Bosnia they



WEB LINK

Land Mines

were used extensively by irregular military forces that never disarmed them. Long after such a war ends, land mines continue to maim and kill civilians who try to reestablish their lives in former war zones. As many as 100 million land mines remain from recent wars; they injure about 25,000 people a year (a third of whom are children). And although they are cheap to deploy, it costs about \$1,000 per mine to find and disarm them.

Public opinion and NGOs have pressured governments to restrict the future use of land mines. After the death of Britain's Princess Diana, who had actively supported the campaign, a treaty to ban land mines was signed by more than 100 countries at a 1997 conference organized by Canada. Russia and Japan signed on shortly afterward, but not China or the United States (which said mines would be needed to slow any North Korean invasion of South Korea). By 2005, 40 million land mines had been destroyed under the treaty, with 69 countries eliminating their stockpiles. A new norm seems to be emerging but its effect on actual military practice is not yet clear.

Navies

Navies are adapted primarily to control passage through the seas and to attack land near coastlines. Controlling the seas in wartime allows states to move their own goods and military forces by sea while preventing enemies from doing so. For most of the 1990s, Western navies enforced a naval blockade against Iraq.

Aircraft carriers—mobile platforms for attack aircraft—are instruments of **power projection** that can exert negative leverage against virtually any state in the world. Merely sending an aircraft carrier sailing to the vicinity of an international conflict implies a threat to use force. For example, in 1996 the United States dispatched two carriers to the Taiwan area when Chinese war games there threatened to escalate. In 2001, however, during a tense standoff when a U.S. reconnaissance airplane crash-landed in China, the United States pointedly refrained from sending aircraft carriers, signaling an intent to settle the conflict diplomatically. Aircraft carriers are extremely expensive and typically require 20 to 25 supporting ships for protection and supply. Only the United States currently operates large carriers (12 of them, costing more than \$5 billion each). Eight other countries (France, India, Russia, Spain, Brazil, Italy, Thailand, and the United Kingdom) maintain smaller carriers that use helicopters or small airplanes.

Surface ships, which account for the majority of warships, rely increasingly on guided missiles and are in turn vulnerable to attack by missiles (fired from ships, planes, submarines, or land). Since the ranges of small missiles now reach from dozens to hundreds of miles, naval warfare emphasizes detection at great distances without being detected oneself—a cat-and-mouse game of radar surveillance and electronic countermeasures.

Air Forces

Air forces serve several distinct purposes—strategic bombing of land or sea targets; “close air support” (battlefield bombing); interception of other aircraft; reconnaissance; and airlift of supplies, weapons, and troops. Missiles—whether fired from air, land, or sea—are increasingly important. In the Soviet war in Afghanistan, the U.S.-made portable Stinger missile used by guerrillas took a heavy toll on the Soviet air force. In 2003, the threat from shoulder-fired missiles kept Baghdad airport closed to commercial air traffic for more than a year.

Traditionally, and still to a large extent, aerial bombing resembles artillery shelling in that it causes great destruction with little discrimination. This has changed as smart bombs improve accuracy. Laser-guided bombs follow a sensor pointed at the target from the air or ground. Other bombs use GPS navigation (see p. 162) to hit targets through clouds, smoke, or sandstorms. Most of the bombing in 1991 Gulf War was high-altitude saturation bombing using dumb bombs. But in the 2003 Iraq War, the massive air campaign early in the war entirely used smart bombs, hitting far more targets with fewer bombs.

The increasing sophistication of electronic equipment and high performance requirements of attack aircraft make air forces expensive—totally out of reach for some states. Thus, rich states have huge advantages over poor ones in air warfare. Despite the expense, air superiority is often the key to the success of ground operations, especially in open terrain.

The U.S. bombing of Iraq (1991 and 2003), Serbia (1999), and Afghanistan (2001), demonstrated a new effectiveness of air power, applied not against the morale of enemy populations (as in World War II), but directly at battlefield positions. After weeks of bombing, Iraqi soldiers in 1991 surrendered at the first chance, and Taliban forces caved in to smaller and weaker opposition armies. The U.S. ability to decimate distant military forces while taking only very light casualties is historically unique. The 2003 Iraq War demonstrated the usefulness of air power, but also its limits. A massive precision bombing raid on Baghdad a few days into the war destroyed hundreds of targets of value to Saddam Hussein's government. It was designed to "shock and awe" enemy commanders into giving up. However, U.S. forces still had to slug it out on the ground to get to Baghdad. Clearly this was one war that could not have been won from the air. As ground soldiers have pointed out, "nobody ever surrendered to an airplane."

Logistics and Intelligence

All military operations rely heavily on logistical support such as food, fuel, and ordnance (weapons and ammunition). Military logistics are a huge operation, and in most armed forces the majority of soldiers are not combat troops. Before the Gulf War, the United

PROJECTING POWER



Different types of military forces are adapted to different purposes. Aircraft carriers are used for power projection in distant regions, such as in the recent Afghanistan and Iraq campaigns.

States moved an army of half a million people and a vast quantity of supplies to Saudi Arabia in a six-month effort that was the largest military logistical operation in such a time frame in history.

Global reach capabilities combine long-distance logistical support with various power projection forces. These capabilities allow a great power to project military power to distant corners of the world and to maintain a military presence in most of the world's regions simultaneously. Only the United States today fully possesses such a capability—with worldwide military alliances, air and naval bases, troops stationed overseas, and aircraft carriers. Britain and France are in a distant second place, able to mount occasional distant operations of modest size. Russia is preoccupied with internal conflicts and its CIS neighbors, and China's military forces are regionally, not globally, oriented (although they are currently attempting to build a navy capable of better power projection).

Space forces are military forces designed to attack in or from outer space. Ballistic missiles, which travel through space briefly, are not generally included in this category. Only the United States and Russia have substantial military capabilities in space. China put an astronaut in orbit in 2003, but it has fewer space capabilities overall. The development of space weapons has been constrained by the technical challenges and expenses of space operations, and by norms against militarizing space. U.S. policy makers in 2001 announced a plan to begin testing space-based lasers (for intercepting ballistic missiles) in several years.

Satellites are used extensively for military purposes, but these purposes do not include attack. Satellites perform military surveillance and mapping, communications, weather assessment, and early warning of ballistic missile launches (some U.S. satellites are accurate enough to read license plates on cars). Satellites also provide navigational information to military forces—army units, ships, planes, and even guided missiles in flight. Analysts pore over masses of satellite reconnaissance data every day in Washington, DC, and other capitals. Poorer states can buy satellite photos on the commercial market—including high-resolution pictures that Russia sells for hard currency. But, in general, outer space is an area in which great powers have great advantages over smaller or poorer states.

Intelligence gathering also relies on various other means such as electronic monitoring of telephone lines and other communications, reports from embassies, and information in the open press. The U.S. military operates a massive intelligence-gathering operation, especially for information relevant to battlefield deployments and other tactical matters. Satellite intelligence is supplemented by monitoring of a very high volume of electronic communications, such as radio and telephone conversations. Terrorists in remote Afghanistan had to use couriers because the U.S. military could monitor their electronic communications.

In 2001, a U.S. reconnaissance airplane that had been eavesdropping along the Chinese coast (from international waters) made an emergency landing in Chinese territory after being bumped by a Chinese fighter jet (which crashed). China held the crew for weeks to protest U.S. surveillance. (And China enjoyed an intelligence bonanza by examining the U.S. plane.)

The largest U.S. military intelligence agency is the National Security Agency (NSA), whose mission is encoding U.S. communications and breaking the codes of

foreign communications. The NSA employs more mathematics Ph.D.s than anyone in the world, is the second largest electricity consumer in the state of Maryland, has a budget larger than the CIA's, and is believed to have the most powerful computer facility in the world. The various intelligence operations taken together are very large and are growing in importance as the information revolution proceeds and as the war on terrorism makes their mission more central.

Evolving Technologies

Through the centuries, the lethal power of weapons has increased continuously—from swords to muskets, machine guns to missiles. Technological developments have changed the nature of military force in several ways. First, the resort to force in international conflicts now has more profound costs and consequences than it did at the outset of the international system several centuries ago. Great powers in particular can no longer use force to settle disputes among themselves without risking massive destruction and economic ruin.

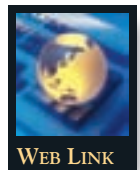
A second long-term effect of technological change is that military engagements now occur across greater standoff distances between opposing forces. Missiles of all types are accelerating this trend. Its effect is to undermine the territorial basis of war and of the state itself. The state once had a hard shell of militarily protected borders, but today the protection offered by borders is diminishing. For example, Israel's successful defense of its borders could not stop Iraqi scud missiles from hitting Israeli cities during the Gulf War.

In recent decades, the technological revolution in electronics has profoundly affected military forces, especially their command and control. **Electronic warfare** (now broadened to *information warfare*) refers to the uses of the electromagnetic spectrum (radio waves, radar, infrared, etc.) in war—employing electromagnetic signals for one's own benefit while denying their use to an enemy. Electromagnetic signals are used for sensing beyond the normal visual range, through radar, infrared, and imaging equipment to see in darkness, through fog, or at great distances. These and other technologies have illuminated the battlefield so that forces cannot be easily hidden.

SMALL BUT DEADLY



The information revolution is making smaller weapons more potent. The U.S.-made Stinger anti-aircraft missile—portable and shoulder-launched—helped turn the tide against the Soviet Union in the war in Afghanistan in the 1980s, with far-reaching consequences. Iraqi insurgents like those shown here in late 2003 kept Baghdad airport closed. The missiles pose a threat to commercial aviation worldwide.



**Evolving
Technologies**



CHANGING
WORLD
ORDER

**The Revolution
in Military
Affairs**

Electronic countermeasures are technologies designed to counteract enemy electronic systems such as radar and radio communications. **Stealth technology** uses special radar-absorbent materials and unusual shapes in the design of aircraft, missiles, and ships to scatter enemy radar. However, stealth is extremely expensive (each B-2 stealth bomber costs about \$2 billion, about three times its weight in gold) and is prone to technical problems.

Electronics are changing the costs and relative capabilities of weapons across the board. Computer chips in guided missiles have made them a formidable weapon on land, sea, and air. The miniaturization of such weaponry is making smaller and cheaper military forces more powerful than ever. An infantry soldier now can use a shoulder-fired missile costing \$10,000 to destroy a battle tank costing \$1 million. Similarly, a small boat firing an antiship missile costing \$250,000 can potentially destroy a major warship costing hundreds of millions of dollars.



INFOREV

**Is Technology
an Equalizer?**

Strategies for *cyberwar*—disrupting enemy computer networks to degrade command and control, or even hacking into bank accounts electronically—were developed by NATO forces during the 1999 Kosovo war. Though mostly not implemented, they will probably figure in future wars. Some experts fear that terrorist attacks too could target computer networks, including the Internet.