

EXHIBIT 6. **Knowledge Is Power**

	1950	1970	2000
High school education	34.3%	55.2%	84.1%
College education	6.2%	11.0%	25.6%
Number of degrees conferred:			
Master's	58,183	208,291	398,000
Doctoral	6,420	29,866	45,200
Professional	15,191	26,948	57,688
Computer in the home	0%	0%	57.6%
Households with Internet access	0%	0%	41.5%
Patents issued	47,800	67,700	175,500
Median age of population	30.2	28.1	35.3

In 1950, only 6.2 percent of the U.S. population age 25 and older was college-educated. Today, the figure is more than four times that, at 25.6 percent, the highest of any nation. Since 1950 the number of master's degrees and doctorates conferred annually has jumped sevenfold, while professional degrees awarded are up from just 15,191 to nearly 58,000 a year.

Human and Technological Wealth

The nation is smarter than it used to be—both in its human capital and in its infrastructure.

The United States leads all other nations with a quarter of its population college-educated in 2000, up from just 6.2 percent in 1950. Roughly 400,000 master's degrees are awarded each year, nearly seven times the number in 1950 and double the 1970 rate. Doctorates and professional degrees have been rising, too. (See Exhibit 6.)

Knowledge isn't just a matter of formal education. It's also experience. The median age climbed to 35 in 2000, the highest ever. By comparison, the figure for 1900 was 23; for 1950, it was 30. If age is a proxy for accumulated know-how, both on the job and off, an older population should be better equipped to solve problems.

What's more, knowledge isn't just the province of humans in today's world. It's embedded in the machines we use, thanks to the spread of increasingly powerful computer chips over the past quarter century.

The signature invention of our times, the microchip spawned important technology spillovers. It started in the 1970s with the birth of the personal computer industry. The 1980s brought "smart" products as companies incorporated chips into cell phones and other devices. The 1990s emerged as the decade of the Internet, with e-mail, e-commerce and e-entertainment.



To leverage our education, Americans routinely use superfast computers that can tap more than 31 million web sites. The United States has over a third of the world's computing power, 66 percent of us have access to computers at home, business or school, and 54 percent use the Internet.



Aside from a handful of mainframe computer operators, few Americans in 1970 had access to a computer, and the Internet's forerunner—the ARPANET (Advanced Research Projects Agency Network)—linked just a few researchers. By one count, the number of U.S. scientists and engineers engaged in research and development today exceeds 3 million, double that of the 1970s.

America controls nearly two-fifths of the world's computing power. We've stored trillions of lines of computer code. Our stock of business equipment and software is 20 times higher than in 1950. It represents a store of "canned" knowledge that simplifies operation, saves time, enhances reliability, reduces human error, and works day in and day out.

Smart products are all around us. Nearly every American family enjoys a wide variety of them—microwave ovens, VCRs and remote controls, to name a few. As amazing as these products are, the impact of the microprocessor goes far beyond household conveniences. In the business world, bar-code scanners and robotic devices lower costs and speed distribution. Important systems, such as communications, can operate with less human intervention, a factor that allows them to continue functioning in times of stress. Data-storage technology makes it easier and cheaper to duplicate records and store reams of information in more than one place.

The Internet, which became a staple of businesses and homes in the 1990s, is revolutionizing our lives. It provides instant access to information, making Americans better informed than ever. Consumers have a 24-hour global marketplace at their fingertips. Companies can interact with suppliers and customers to better manage their inventories. By linking sales to inventories and suppliers, modern technology is reducing unanticipated accumulation of unsold goods, often a source of economic instability. Point-of-sale scanners connect to warehouse databases and suppliers, so orders for new stock can match sales.

The inventory-to-shipments ratio hovered at 1.7 months from 1957, when data collection began, to the early 1990s. With the advent of supply-chain management, the ratio consistently declined in the 1990s and fell to a low of 1.3 months at the start of this decade.

With the Internet's power to communicate, employees are increasingly freed from the commute to the workplace. The number of U.S. telecommuters reached 28.8 million in 2001, an eightfold increase in 10 years' time. Many of us can work from home—or just about any other place—so maintaining the nation's production depends less on gathering employees at particular places.

Telecommuting isn't the only way modern technologies keep Americans working when a shock jolts the economy. If shifting forces lead to layoffs, the unemployed can turn to more than 300 online job-search engines, a service that



Whether the goal is fighting world hunger, preserving the environment, developing new vaccines to thwart bioterror or tracking global flows of terrorists' funds, knowledge is power—and no nation forges knowledge better than the United States.



EXHIBIT 7. **Winning the War**



Military Deaths

War	Deaths
World War I	116,516
World War II	405,399
Korean War	36,516
Vietnam War	58,198
Gulf War	148
1980–2000	563



More than 405,000 U.S. military personnel lost their lives in World War II; 58,198 were lost in Vietnam. Including the Gulf War, fewer than 600 military personnel have died since 1980 serving their country, testimony to a wealthy nation's ability to substitute spending and technology for the lives of its citizens. Smart bombs, night vision, military satellites, laser targeting devices, stealth fighters and much, much more—the strength and intelligence of America's military reflects that of our economy.

didn't even exist in 1990. What keeps us working keeps us stronger.

The country's world-class technology was on display in the precision bombing in Afghanistan. So-called smart bombs combine computer chips, laser guidance systems and global-positioning satellites to deliver ordnance on target and minimize civilian casualties. Unmanned drones, controlled from thousands of miles away, can return video feeds or drop bombs. Spotters on the ground use handheld computers and satellite telephones to provide real-time battlefield information.

Advances in battlefield technology are reducing the risks for America's fighting men and women. Including terrorist attacks, U.S. military personnel killed or missing in all hostile action from 1980 to 2000 total fewer than 600, a triumph of technology and tactics. *(See Exhibit 7.)*

In the wake of September 11, technology will help improve security at home. Sensors in public buildings and transport will help secure us against chemical or biological attack. Technology allows us to track the flow of money and freeze the assets of our enemies.

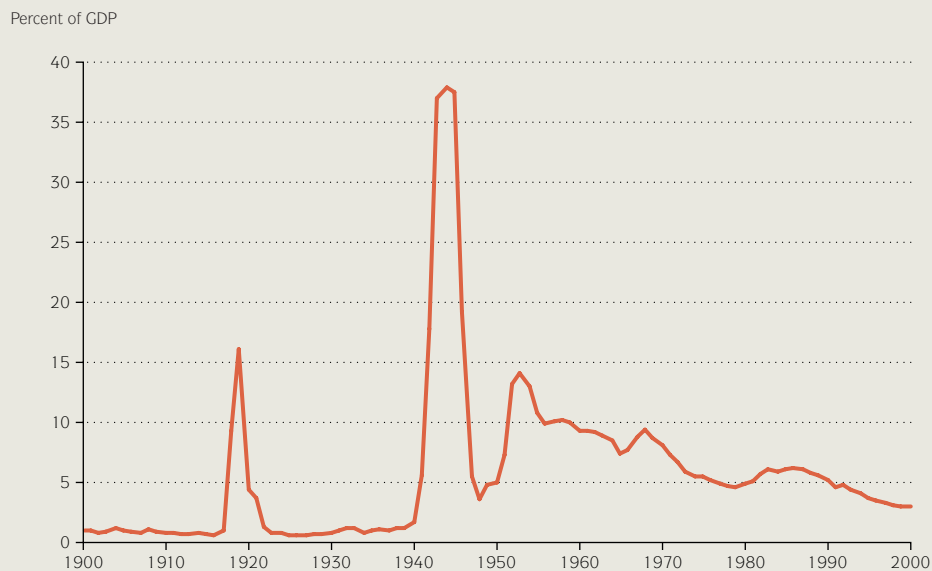
When it comes to increasing the safety of air travel, antiterrorist measures will go well beyond the metal detectors and X-ray machines now used in most terminals. Airports are starting to deploy explosives detectors that use medicine's CT technology to scan luggage. New identification technologies





Authorities used a Percussion-Actuated Nonelectric (PAN) Disrupter, developed by Sandia National Laboratories, to disarm shoe bombs that made it aboard a trans-Atlantic flight. The bomb-disabling tool is an example of how techno-wizardry is used to ensure our nation's security.

Defense Spending



are capable of reading fingerprints, palms and facial features. With just a puff of air, a particle blaster can detect explosive residue on passengers' clothes and carry-ons.

Aboard aircraft, security could be increased with surveillance cameras and silent alarms that could be tripped by flight attendants. The technology exists to prevent planes from flying into specified zones or to take control of an aircraft from the ground.

On the ground, technology provides alternatives for many of the traditional ways of doing business. For example, teleconferencing has become an option for American business executives reluctant to travel. Malls are safe, but anyone who worries about the risks of crowded shopping areas can now buy just about anything online.

A complex, interconnected economy might seem more open to attack because communications, banking and other key systems are easily accessible. With technology making the world a small place, disruptions could ripple through the global economy. The response to September 11, though, shows that our economy isn't easily destabilized.

Technology can't eliminate all risks. New devices often have to overcome obstacles in cost, convenience and reliability. Even so, the market will do what it has always done—innovate. New safety features will help reduce the anxiety that might slow economic activity, allowing us to raise incomes and maintain jobs, even in a more dangerous world.

