DOCUMENT RESUME

ED 350 893 HE 025 869

TITLE	American Imagination at Work: Colleges and Universities in the United States.
INSTITUTION	American Council on Education, Washington, D.C.
PUB DATE	92
NOTE	65p.
AVAILABLE FROM	American Council on Education, Publications Department GR, One Dupont Circle, Washington, DC 20036 (Single copies free, 2-10 copies $6 each, over 10 copies $5 each).
PUB TYPE	Reports - General (140)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Colleges; Degrees (Academic); Educational Legislation; *Financial Support; *Government School Relationship; *Higher Education; *Public Service; *Relevance (Education); Research; *School Community Relationship; Teacher Role; Teacher Student Relationship; Universities

ABSTRACT

The role and importance of American colleges and universities in shaping the national experience within the United States is discussed. Noted is the value of having a college degree in today's society and how it affects family income. The report continues with an assessment of the scope of higher education institutions in America, considers the student diversity that is now present and increasing, and explains the importance of the role of the college teacher in preparing students to function effectively in a modern, complex, and global economy. The benefits that have been derived from research conducted at colleges and universities are highlighted, such as the uses involving high-intensity microwave radiation, better agricultural techniques, and better weather forecasting. Higher education's role in public service is also highlighted, for example, literacy training for adults and bringing academic expertise to bear on local, state, and national problems. Also discussed are the various ways colleges and universities receive their funding, particularly the Federal Government's continued role. The report concludes with an historical review of past government support of higher education, a discussion of the aspects needed in a continued partnership between government and higher education, and higher education's obligations in making life better for Americans. (GLR)

American Imagination at Work:

COLLEGES AND UNIVERSITIES IN THE UNITED STATES

American Council on Education

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Charges for multiple copies are as follows:
2-10 copies: $6.00 each
Over 10 copies: $5.00 each
All orders must be paid by check or money order (made payable to American Council on Education).

This publication was produced on an Apple Macintosh II computer using PageMaker 4.0 and Adobe Illustrator software.

In many ways, colleges and universities are an experiment of the American imagination, the places in which the United States creates its future.

FOREWORD

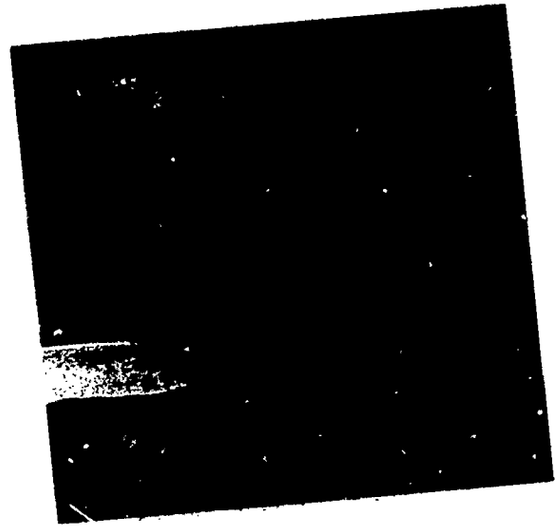
Most Americans know something about higher education. For many, it is little more than an abstraction, an ivory tower or an activity requiring public support. For others, higher education is much more personal and intense—a community college that provided job skills, a liberal arts institution that shaped their view of life, a law school that prepared them for the bar, or a university hospital that helped save a loved one. Whatever the conception, most people understand higher education as an important national resource.

But very few understand that America's colleges and universities help shape virtually every aspect of our national experience. They are the doorways through which millions pass in their search for a better life. They develop the skilled intelligence required in a complex, growing, modern economy. They conduct the research that adds to our knowledge of ourselves and the world around us. Their commitment to public service touches virtually every community in America. In many ways, colleges and universities are an experiment of the American imagination, the places in which the United States creates its future.

This document reflects the American Council on Education's commitment to advancing public understanding of higher education. The Council hopes that most Americans will find here a clear and convincing statement about the significance of higher education to their lives, their communities, and their nation.

Robert H. Atwell, President
American Council on Education
June 1992

Imagine an America Without its Colleges and Universities



It's easy to take the familiar and the everyday for granted. But imagine what America would be like if its colleges and universities had never existed, if the progress they made possible had not taken place.

Opportunity, the engine of a democratic society, would still belong largely to the well-born and the well-to-do. Decent jobs would be beyond the reach of low-income youngsters; most would be consigned to low-skill, low-wage work with few chances to escape. For immigrants and members of minority groups, the American dream would be a hollow promise. Nine out of ten African Americans would probably still live in poverty.

Medical science would be in its infancy. Polio, for example, would strike more than 40,000 American families every year. Blood transfusions might be legally prohibited—as they were in Europe until this century—and surgical procedures requiring transfusion would be impossible. Kidney dialysis and treatment of heart failure and diabetes would be more difficult, perhaps unknown.

The **quality of American life** would be impoverished. Historians, literary scholars, philosophers, and anthropologists, lacking an intellectual home, would be unable to reweave the fabric of our past to give us a new understanding of our present. University services—delivering instruction in homes, assistance on the farm and in the workplace, along with practical advice on everything from teenage pregnancy to food handling and environmental problems—would be unavailable.

Progress Depends on Real People on Real Campuses

Each year, colleges and universities open the doors to higher standards of living for millions of Americans. In homes with a college degree holder, average incomes are 75 percent higher than in homes with only a high school graduate.

Fortunately, Americans do not live in that imaginary world. Consider the three broad claims on the preceding page. Progress in each of these areas came from real people on real campuses working with real students.

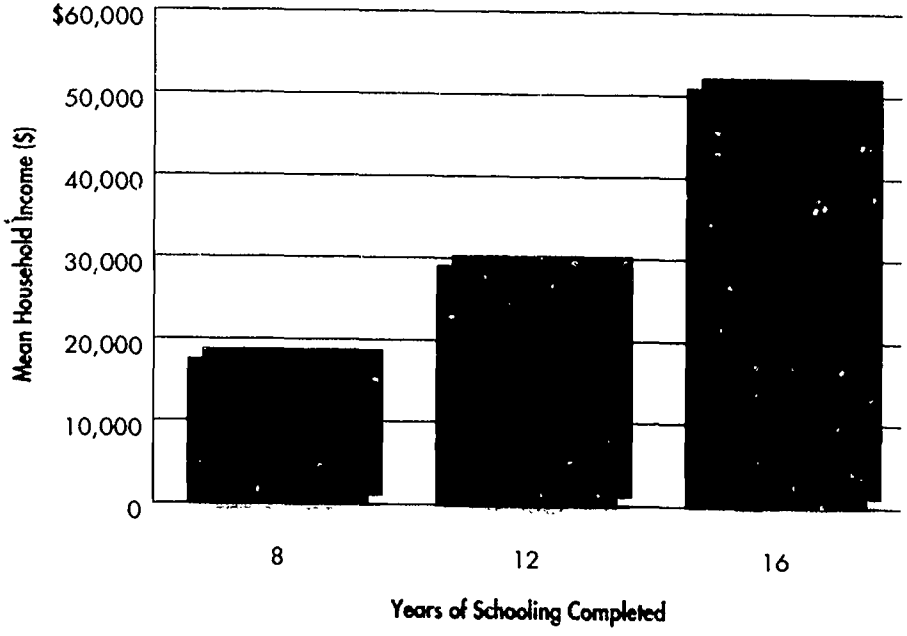
In the United States, a college degree is a ticket to a better life, both for individuals and for the nation. Each year, colleges and universities open the doors to higher standards of living for millions of Americans. In homes with a college degree holder, average incomes are 75 percent higher than in homes with only a high school graduate. Since 1960, colleges and universities have helped triple the size of the African-American middle class. Throughout this century, increases in the educational attainment of the workforce accounted for 27 percent of growth in the nation's wealth. Advances in knowledge (better education, research, new technologies, and improved managerial and organizational know-how) accounted for 55 percent.

Jonas Salk (University of Pittsburgh) and Albert Sabin (University of Cincinnati) created the polio vaccines that bear their names. Their achievements drew on the pioneering work of Nobel laureates Enders, Weller, and Robbins (Harvard University), who grew the virus for the first time. Thanks to the work of Karl Landsteiner, an Austrian who completed his early scholarship in Europe and joined Rockefeller University in 1922, blood is now "typed" and grouped, making transfusions safe and complex surgical procedures possible. John Abel (University of Michigan and Johns Hopkins University) created the first artificial kidney and isolated both adrenalin and insulin.

Higher education's contributions to the quality of American life are equally impressive. University services reach into every nook and cranny of American life, and student volunteers add hope to local communities. Scholars daily explore basic questions

about the human condition: How long ago did the human species appear? How are the beliefs of Christians, Hindus, Jews, and Muslims reflected and shaped by the *New Testament*, the *Vedas*, the *Torah*, the *Koran*, and other sacred texts? Did Shakespeare write all those plays? When did Native Americans first cross the Bering land bridge to settle this continent? In shedding new light on our past, the answers shape our present and our future.

A College Degree:
A Big Step Up the Economic Ladder



Source: U.S. Bureau of the Census, 1989

The America We Know is Inconceivable Without Higher Education

The nation's investment in higher education is not thrown to the four winds; it is returned to all of us, many times over.

The truth is that an America without its colleges and universities is unimaginable. Higher education is certainly more than numbers, more than degrees earned or dollars spent. But its sheer scope remains impressive:

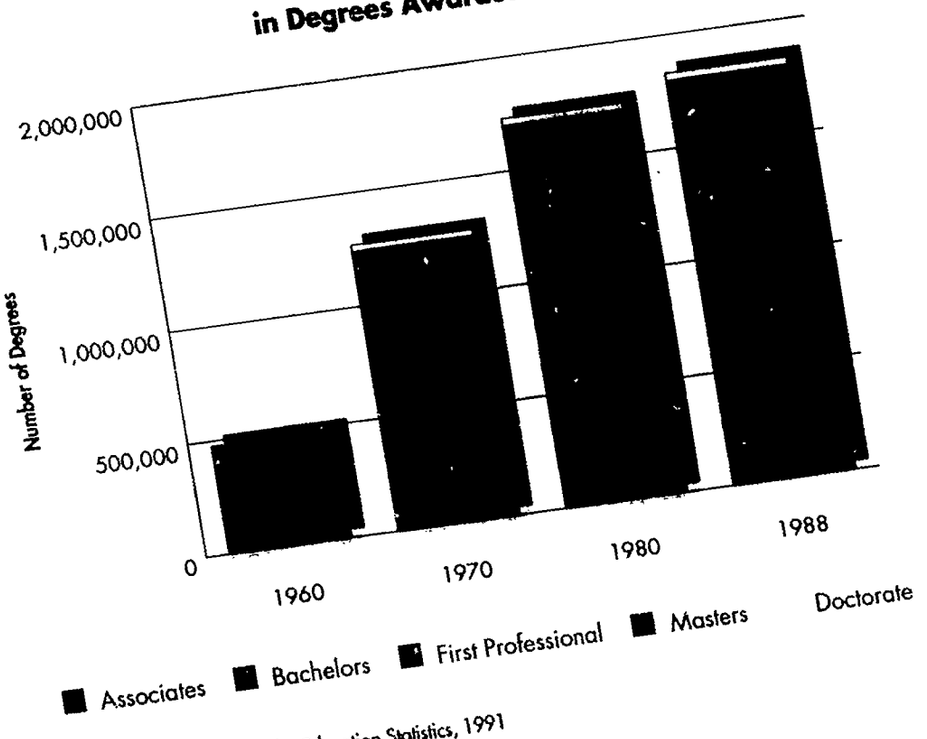
- There are more than 3,300 nonprofit colleges and universities in the United States—about 1,560 public and 1,750 independent. The total includes 1,200 two-year institutions.
- Colleges and universities award 2 million degrees a year—more than 1 million bachelors, 470,000 associates, 337,000 masters, 40,000 doctoral, and 74,000 first-professional degrees (e.g., law and medicine).
- These institutions enroll more than 17 million students annually. About 89 percent of these students (15.2 million) enroll as undergraduates in the fall or throughout the year. The remaining 1.8 million are graduate or professional students.
- In providing work for 2.5 million people nationwide, higher education employs more workers than the automobile, steel, and textile industries combined. In many towns and cities, colleges and universities are major employers. The employees—teachers, support personnel, researchers, managers, and administrators—are engaged in everything from basic maintenance to advanced research.
- These institutions represent a $160 billion enterprise, accounting for about 3 percent of the nation's Gross Domestic Product (GDP).
- Higher education is America's "hidden export." More than 400,000 foreign students enroll in college here each year. According to the Commerce Department, they bring about $5 billion

into the country annually to cover their expenses.

American colleges and universities, in brief, play a major role in preparing the nation for the challenges the future will place before it. The nation's investment in higher education is not thrown to the four winds; it is returned to all of us, many times over.

That return is realized in four important ways: through students, faculty, research, and public service.

Postwar Growth in Degrees Awarded



Source: National Center for Education Statistics, 1991

Students: The New Diversity

A Yale University student once turned in a pre-holiday examination to English professor William L. Phelps with the following note: "God only knows the answer to this question. Merry Christmas." Phelps responded, "God gets an A. You get an F. Happy New Year."

Most students sooner or later learn the lesson embedded in Phelps' clever note: Although charm will carry one a long way, real reward comes from real effort. On campus today, that lesson is being taught to more students, and to more different kinds of students, than ever before.

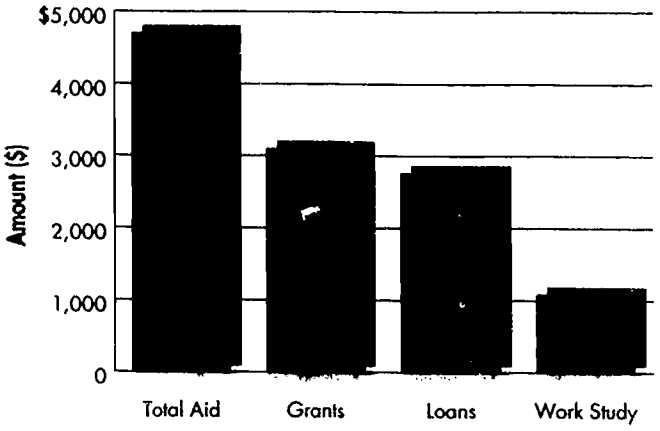
Start with the new diversity on campus. Fewer and fewer students today match the traditional image of a college undergraduate—a white male from a relatively affluent family, under the age of 22, attending college full time:

- About one in five students today is a member of a minority group, a figure reflecting rising enrollments among Hispanics, Asians, and African-American women.
- Affluence has been replaced by need: 60 percent of full-time undergraduates receive financial assistance, averaging $4,700 per student per year.
- The number of older students on campus has increased by 141 percent since 1972. Today, about 43 percent of all students are over the age of 25, and nearly 20 percent are older than 35.
- About one in ten students reports having a disability, most frequently a visual or health impairment, hearing difficulty, or orthopedic problem.
- More women than men have been enrolled every year since 1979.
- More than four of ten undergraduate and graduate students (in two-year and four-year institutions) attend school part time.

These changes help explain why only about one-half of the students enrolled full time in four-year institutions receive a bachelor's degree within six years. Older students and those from low-income backgrounds find it difficult to continue in school full time. Nevertheless, graduation rates for younger students follow the traditional pattern: Three out of four 18-year-olds who enroll full time in a four-year institution immediately after high school, and persist full time, receive a degree within six years.

While nearly 60 percent of full-time undergraduates receive financial aid, they increasingly rely on loans to finance their education. Loans once accounted for just 20 percent of federal assistance; because grant funds have not kept pace with inflation, loans are now the largest item in the federal student aid budget. With average annual loan awards of more than $2,700, it is not unusual for students to graduate saddled with debts of $10,000 or more.

Average Aid Awards, Full-Time Undergraduates, Fall 1989



Source: National Center for Education Statistics, 1991

The growing number of low- and middle-income college students, coupled with reports of steep increases in tuition, has fueled concern that costs are rising beyond reason. But 73 percent of all undergraduates attend public institutions with tuitions averaging less than $3,000 per year. Another 23 percent face tuitions below $12,000.

Barely 4 percent of students are charged more than $12,000, and two-thirds of them receive scholarships, grants, subsidized loans, or all three. Most of the public concern relates to reports of college charges, including room, board, and fees, in excess of $20,000 annually. But barely 2 percent of all undergraduates—most from families with annual incomes in excess of $80,000—pay these charges in full.

Teachers Have a Profound Impact on Students

"I remember my old violin professor in Russia. He said that someday I would be good enough to teach."

Jascha Heifetz, world-famous violinist, on appointment as professor of music at UCLA.

Most of us are lucky enough to remember a fine teacher. Perhaps she or he was an elementary or high school teacher who pointed to the possibilities that lie within us. Frequently, it was a college professor who gave us the tools of literature, history, mathematics, or chemistry to explore the complexities of life. As Heifetz's warm memory of a teacher on another continent reminds us, wherever found, these teachers have a profound impact on their students.

When all is said and done, higher education is about teaching. It is about the obligation each generation owes the next: passing on the culture's traditions, values, insights, and store of knowledge. With the amount of raw information doubling every five years, teaching today is more and more concerned with developing critical faculties, i.e., the ability to think clearly, reason soundly, argue logically, and see things in the mind's eye. The best teachers bequeath to their students a legacy of how to investigate problems, test assumptions, and formulate solutions—in short, the processes that help people make judgments about what is mere information and what is genuine knowledge.

About 762,000 faculty members teach in America's colleges and universities. With more than two-thirds of them holding doctoral or professional degrees (or training beyond those levels), they represent an arsenal of talent unmatched in the world. It is through them that the university provides young people with the knowledge and skills they need to function effectively in a modern, complex, global economy.

The Remarkable Ammonia Molecule

How many people know that under the proper conditions, the ammonia molecule vibrates 24 billion times every second? How many even care?

But every day, virtually everyone in the United States uses technologies derived from this fact. They permit homemakers to prepare their families' meals, pilots to guide passengers safely home, surgeons to perform delicate eye surgery, music lovers to enjoy their favorite recordings, and sports buffs to watch, hear, and follow their teams.

Physicist Charles Townes (Columbia University) earned a Nobel Prize because he both knew and cared. Attempting to improve microwave technology in the 1950s, he excited the ammonia molecule to 24 billion vibrations a second and converted that energy into a flood of microwaves of great intensity and coherence, i.e., they moved in the same direction. The microwave and laser technologies of today are major practical applications of Townes's vision. Scientific phenomena that appear mysterious, even trivial, to the general public bear directly on daily life.

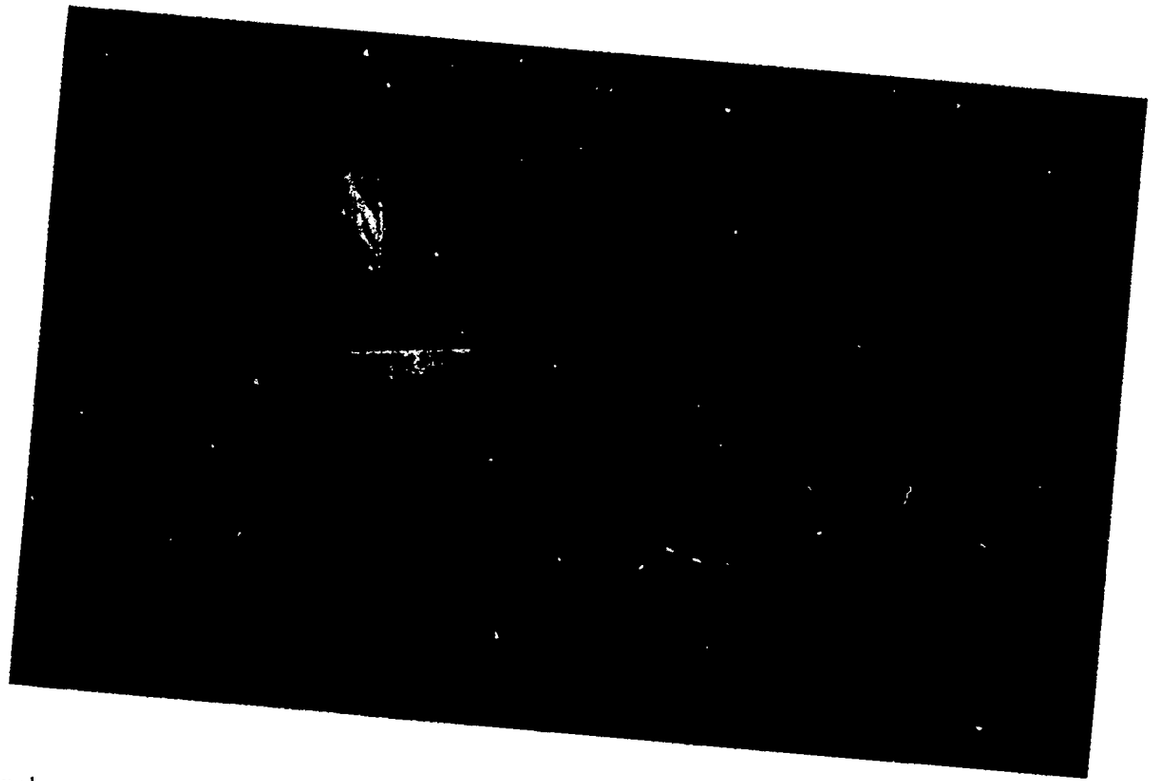
High-intensity microwave radiation is just one example of the contributions academic research has made to our national life:

- Robert Goddard (Clark University) practically invented the rocket science that took human beings into space. He held more than 200 patents, including those for combustion chambers, liquid oxygen as a fuel, gyroscopic navigation, and multi-stage rockets.
- Geophysicist Harry Fielding Reid (University of Chicago and Johns Hopkins University) was the first of many researchers to examine such natural disasters as earthquakes and hurricanes. Reid identified fault lines in the earth's crust as the cause of the 1906 San Francisco earthquake.

- Chemist Charles Martin Hall, barely 12 months out of Oberlin College, laid the foundation for the giant American aluminum industry by inventing a method to produce aluminum by electrolysis.
- Agricultural chemist George Washington Carver (Tuskegee Institute), who was enslaved as a child, replenished depleted tobacco farms throughout the South by fertilization and replanting with peanuts and sweet potatoes, which provided critical new cash crops for southern farmers.
- Chemist Julius Nieuwland (University of Notre Dame) developed a synthetic rubber in his laboratory, and went on to help the Dupont company develop nylon, the first synthetic fiber. His work helped transform the rubber and textile industries.
- Electrical engineer Vannevar Bush (MIT) developed the first analogue computer in 1925, the precursor of the ENIAC and UNIVAC electronic digital computers developed by John Mauchley and John Eckert, Jr. (University of Pennsylvania) between 1946 and 1951. Their work began the computer revolution on which today's industry and commerce depend.
- Meteorologist Jacob Bjerkenes (University of California) thrust weather forecasting into the space age in 1952 by taking pictures of cloud covers from primitive rockets.
- Physicist Georg Bekesey (Harvard University) devised the first audiometer to test the human hearing function, vastly improving life for an estimated 20 million hearing-impaired Americans.

- Biophysicist Rosalyn Yalow (Hunter College and the Veterans Administration) won the Nobel Prize in 1977 for developing "radioimmunoassay," a technique used to locate minute quantities of biologically active substances in the body.
- Physicist Allan Cormack (Tufts University) designed the CAT scanner (Computerized Axial Tomography) in 1973. CAT scans, which provide a three-dimensional image, are a huge diagnostic improvement over X-rays, particularly for such organs as the brain.

Literally hundreds of such examples define the university as the institution Americans rely on to lead them toward and beyond the frontiers of human knowledge. Today's scientists are picking up the pace. New advances in genetics and biomedicine, artificial intelligence and information technology, superconductivity and materials science—and new knowledge and techniques for dealing with global warming, depletion of the ozone layer, and toxic waste—daily push back the boundaries of human understanding. In the next century, this work surely will include cures for many of today's baffling illnesses, miracles of life extension, and the technical achievements required to solve a host of problems in the environment, space, manufacturing, the economy, and education itself.



KNOWLEDGE TODAY IS FOR EVERYBODY'S SAKE

"The university as producer, wholesaler, and retailer of knowledge cannot escape service. Knowledge today is for everybody's sake."

Clark Kerr, President Emeritus
University of California, 1972.

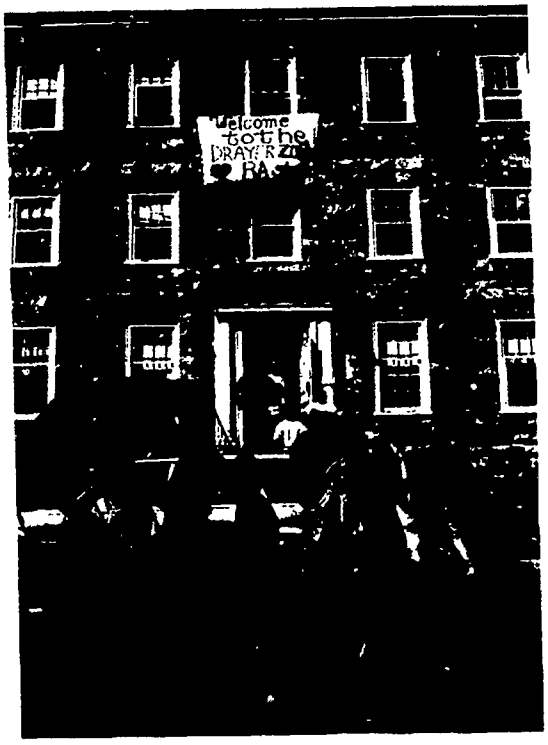
Higher education is more than a place of teaching and research, the curator and creator of knowledge. Faculty members and administrators have long understood Kerr's concept that knowledge must be put into practice.

When campuses open their lecture halls and theaters so that local citizens can enjoy well-known visiting speakers, outstanding productions, and student recitals, they perform a public service. Students also serve. For example, an average of 780 undergraduates volunteer for community service at each of the 260 institutions involved in Campus Compact. These students provide more than 12 million hours of service to help tutor inner-city youngsters, recycle waste, and reduce hunger and homelessness.

In a more direct sense, community colleges respond to the call to service when they provide literacy training for adults or job-specific training for local employers and employees. So, too, do universities, with extension services that reach millions of Americans on a daily basis, in their homes, on their farms, and at their jobs. College and university partnerships with local schools, public officials, and business leaders are another example. They bring academic expertise to bear on important local, state, and national problems.

But in a larger sense, colleges and universities already have responded to the imperative for public service every time one of their graduates puts his or her education to work. Consider all the talents sought and needed in today's world: A husband and wife turn to a priest, minister, rabbi, or psychologist for help with their marriage. An elderly man seeks a surgeon for a hip-replacement operation. A corporate personnel officer places advertisements seeking an accountant, an engineer, a machinist comfortable with new computerized techniques, and a word-processing supervisor. A middle-aged woman asks her friends for the name of an attorney to draw up a will. Parents visit their child's teacher to discuss a learning difficulty. What these seekers have in common is confidence that they will find the know-how they need. That confidence, for the most part, is well placed. Colleges and universities, in taking their public service obligations seriously, have already put talent to work.

Sharing in the Labor and the Hope



Alexander the Great, about to begin his conquest of Asia, distributed his wealth among his followers so that while away from home, they would not worry about their families' welfare. Asked what remained for himself, Alexander responded "Hope." Whereupon, a general refused his allowance, declaring, "We who share in your labors will also take part in your hopes."

Americans share generously in the labors and the hopes of higher education. Unlike higher education in most developed countries—in which government support covers costs—colleges and universities in the United States are financed by diverse sources of support:

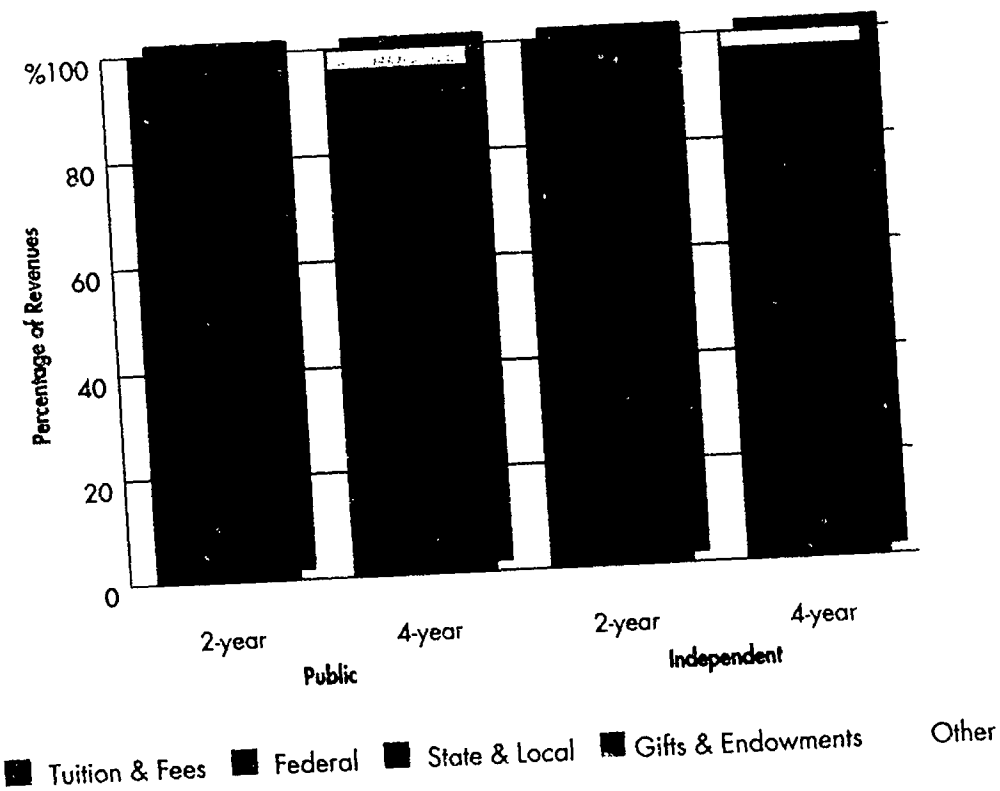
- Public support from all sources (federal, state, and local) accounts for nearly one-half of all institutional revenues.
- Tuition and fees account for about one-quarter of overall income.
- Gifts and endowments contribute about 8 percent of all income. Remaining revenues come from other sources including auxiliary enterprises and university hospitals.

As the figure to the right indicates, these diverse sources are brought to bear in distinctive ways depending on institutional type and control. The typical independent institution relies heavily on tuition and fees for general education revenue, i.e., revenue excluding auxiliary enterprises, hospitals, and the like. Public institutions rely more on state and local assistance. Eighty-four percent of the revenues at independent two-year institutions (which enroll less than 2 percent of all students) is derived from tuition and fees. By contrast, public two-year institutions enroll 35 percent of all students; state and local support accounts for 75 percent of their income.

Despite the conventional wisdom that endowments are a major source of income, at most colleges and universities they are either nonexistent or too small to make a difference. The total value of all endowments, about $64 billion, is impressive. But only 125 institutions manage an endowment in excess of $50 million, and 29 of them account for more than one-half of all endowment funds. Of the 1,600 independent four-year institutions, 60 percent have endowments below $5 million—40 percent, below $1 million. The vast majority of public institutions have no endowment of any kind.

The federal government is the major financial actor in two critical areas: student aid and research. More than one-third of all undergraduates benefit from federal aid programs. By contrast, about 29 percent receive non-federal assistance from states, localities, or institutions. At the graduate

Sources of Support
Fiscal Year 1987



Source: National Center for Education Statistics, 1991

Although colleges and universities perform only one-tenth of all R&D (public and private) in the United States, they are responsible for roughly half of the nation's basic research.

level, although the largest proportion of students (about one-third) benefits from institutional assistance, more than one-quarter receive federal assistance. Federal student assistance helps realize higher education's promise of access and opportunity.

Campus research also depends heavily on federal funding, which provides about three-quarters of the financing for academic research. The Department of Health and Human Services (primarily through its National Institutes of Health) and the Department of Energy provide the lion's share of university research funding. But virtually every federal agency is involved, with the National Aeronautics and Space Administration, the Department of Defense, and the National Science Foundation providing significant support. With this funding, higher education plays a unique role: Although colleges and universities perform only one-tenth of all R&D (public and private) in the United States, they are responsible for roughly half of the nation's basic research. Basic research in the past helped create the America we know today. There is every reason to believe that Americans will reap the fruits of today's research tomorrow and into a new century.

Historic Partnership for the Common Good

The history of higher education in the United States is, in many ways, the story of a successful partnership between government and the private sector, a partnership to secure the common good.

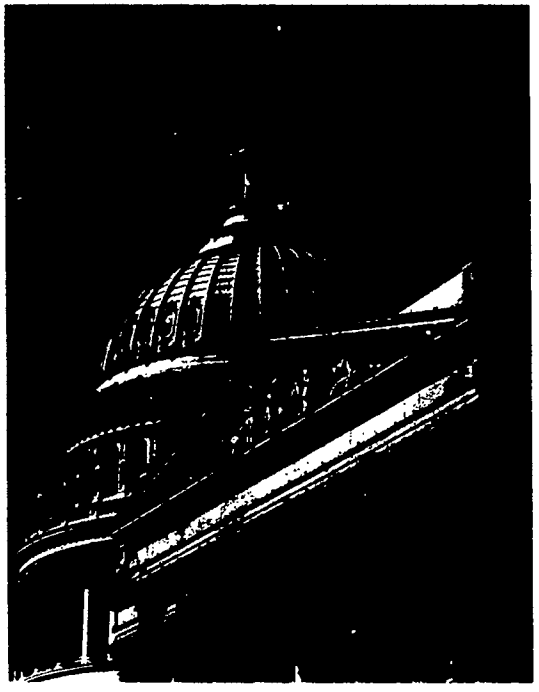
The earliest compacts of the partnership—the Northwest Ordinance of 1787 (laying land aside for educational purposes), the Morrill Act signed by President Lincoln (creating land-grant institutions), and the Hatch Act (authorizing county extension agents)—are a record of a young republic's confidence in education as the road to the future.

Since the end of World War II, government and higher education have breathed new life into the partnership:

- The G.I. Bill, signed by President Roosevelt in 1944, provided the benefits of a college education to millions of veterans returning from the war.

- The National Defense Education Act, passed at the urging of President Eisenhower in 1958, upgraded science instruction in elementary and secondary schools and provided loans and grants to millions of Americans for undergraduate and graduate study.
- The Higher Education Act of 1965, enacted under the leadership of President Johnson and amended with the support of every president since, fueled the development of community colleges and provided loans, grants, and campus jobs to help millions of students finance their education.
- Since 1945, when confronted by urgent national problems—in diplomacy, national security, energy and the environment, health care, aeronautics and space, technology, and agriculture—federal leaders have turned to institutions of higher learning for advice and for highly skilled experts capable of breaking new ground.

The partnership endures today with bipartisan support from public officials. In return, higher education has provided the nation with a skilled and talented work-force, expanded opportunity throughout our society, and helped support democratic institutions by standing for freedom of inquiry and the open expression of diverse views.



The Partnership Must Embrace the Future

If higher education is to continue to serve the nation's needs, its partnership with government must embrace the future. Despite record deficits and difficult economic times, the partnership must be strengthened, not abandoned. Abandoning the partnership would mean leaving behind a powerful force for American renewal. Strengthening it would mean strengthening America and the American people.

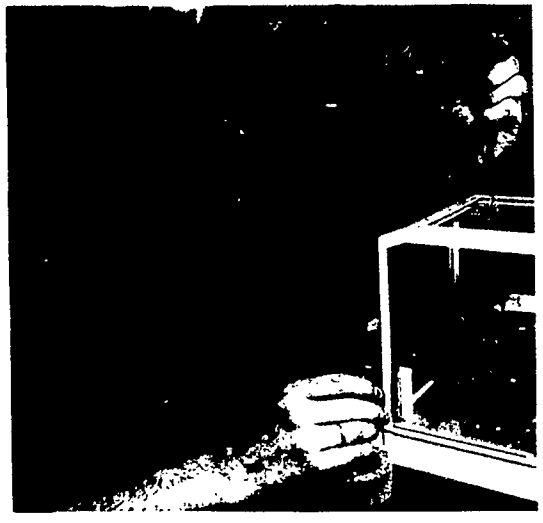
Three aspects of the partnership deserve particular attention:

Expand Postsecondary Opportunity. All parents dream of sending their children to college. Lack of money should not stand in the way. It is time the partnership turned its attention to adequate support for financial aid programs. The nation should aim to reduce reliance on loans for undergraduate and graduate study. At the same time, colleges and universities must hold the line on tuition increases that fall with greatest impact on low- and moderate-income families.

Build Educational Quality. Many targeted federal programs advance national purposes, foster scholarship, and maintain high-quality learning environments on campus. In a time of wrenching global change, these targeted efforts deserve new attention. They include: language and area study programs aimed at developing experts on foreign cultures; employee training activities, many based in community colleges; programs to assist institutions serving historically disadvantaged youngsters, including African Americans, Asian Americans, Native Americans, and Hispanics; the National Endowment for the Humanities; and a variety of fellowships, traineeships, and research grant opportunities available through diverse federal agencies.

Strengthen the Research Base. The academic research base in science, engineering, and biomedicine is critical to the nation, the economy, and our people's health. Yet, the number of federally funded graduate fellowships and traineeships has fallen from 60,000 in 1969 to 14,000 today. Support for research facilities and instruments has melted away. Too much research is defined by ever-shifting federal priorities, rather than being driven by university strengths or areas of scientific promise. And, provisions of the tax code that encourage private investment in university research are threatened annually. America needs a stable, coherent policy to support its research infrastructure.

Higher Education Has Obligations, Too



Teaching, research, and public service have provided a fertile seedbed for a new and better life for all Americans. More than being the places to which Americans have turned for answers, institutions of higher learning have been the places to which people have looked for the new questions that draw our nation forward. Higher education holds the freedom to ask these questions in trust from the American people. If colleges and universities are to remain true to that trust, they, too, have certain obligations to meet:

- Colleges and universities must reaffirm their obligation to provide truly equal access for all qualified students, regardless of ability to pay or racial or ethnic background.
- Institutions have to do a better job of restraining the cost increases students must bear.
- Presidents and trustees must persist in their efforts to reform intercollegiate athletics by insisting on academic control of college sports.
- Faculty members and discipline-based associations must maintain their commitment to truth and peer review as the arbiters of academic work.
- Trustees and governing boards must ensure that public funds are managed with integrity and fidelity to the public interest.

The American Crusade

Thomas Jefferson once described America as an idea, "a crusade against ignorance." Throughout his life, Jefferson carried the banner in that crusade. With his contemporaries Benjamin Franklin, whose Academy became the University of Pennsylvania, and George Washington, who encouraged the establishment of Washington College in Maryland, Jefferson nourished democracy by nourishing higher education. In asking to be remembered, he neglected his service as third President of the United States in favor of such accomplishments as drafting the *Declaration of Independence* and founding the University of Virginia.

Higher education in America is many things. It is 17 million students as well as 2.5 million professors, administrators, and employees toiling on their behalf. It is research breaking new ground in medicine, increasing the nation's wealth, and improving the quality of American life. It is public service putting knowledge into practice throughout the United States. America's colleges and universities cast light in many directions; as the English poet John Masefield put it, wherever a college or university stands, it stands and shines.

That light shines with special brilliance when it falls on the American crusade. Jefferson was correct: A nation cannot be both ignorant and free. Confronted by ignorance and its companions—poverty, illiteracy, intolerance, and injustice—the people of the United States have put their faith in higher learning. That faith has sustained free inquiry, free expression, and the values that lie at the heart of American life: freedom, fairness, opportunity, and the dignity of every member of the human race.

ACKNOWLEDGMENTS

The American Council on Education wants to pay special tribute to the individuals who gave their time and energy to the development of this report.

This document was prepared under the guidance of Charles B. Saunders, Jr., Vice President of the Council's Office of Governmental Relations. Pat Smith, Director, Office of Legislative Analysis, and Becky Timmons, Director of Congressional Liaison, served as able and effective project directors.

The report was written by James Harvey, Harvey & Associates, Washington, D.C., with the assistance of Bruce Boston and research and layout support from Frank Harvey. The writers want to acknowledge the contributions of the National Center for Education Statistics (NCES) and of the late Isaac Asimov to their work. Two NCES publications were particularly helpful: *Digest of Education Statistics 1990* and *The Condition of Education 1991* (Volume 2: Postsecondary Education). Mr. Asimov's *Chronology of Science and Discovery* (1989) and *Biographical Encyclopedia of Science and Technology* (1982) were invaluable guides to the contributions of academic science to human progress.

The final drafts of this report benefited from the thoughtful and constuctive criticisms of several expert reviewers including, in particular, Charles J. Andersen and David Merkowitz of ACE, and William O. Baker, Chairman (Retired), AT&T Bell Telephone Laboratories.

Wendy Bresler, ACE's Assistant Director of Publications, prepared the manuscript for publication. The report was designed by Candy Kurz Rogers. Jack Caldwell, Director of Central Services, oversaw the publishing.

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and pages iii, v, 1, 10, 11, 12, 14, 17, 21, 22, and 23