Committee 1
The Information Revolution,
Higher Education and Research

DRAFT--Oct. 15, 1997
For Conference Distribution Only

THE UNIVERSITY IN THE TWENTY-FIRST CENTURY

by

Richard L. Rubenstein
President
University of Bridgeport
Bridgeport, Connecticut USA

The Twenty-first International Conference on the Unity of the Sciences
Washington, D.C. November 24-30, 1997

The University in the Twenty-first Century

By

Richard L. Rubenstein[1]
University of Bridgeport

DRAFT-NOT FOR PUBLICATION

In a little more than one hundred years, universities have undergone a more dramatic series of changes than in any previous era. The first true university was founded in Bologna in the eleventh century. At first, civil and canon law were the only branches of study. Students prepared for service in the two most important institutions of the time, church and state. About the year 1200 the faculties of medicine and philosophy (or liberal arts) were formed. The faculty of science was formed in the seventeenth century.

Founded some time between 1150 and 1170, the University of Paris was the first university established north of the Alps. The schools out of which it arose were those attached to the Cathedral of Notre Dame. It quickly became noted for the teaching of theology and with papal support became a center of orthodox theological teaching. The early universities were corporations of students and masters. They were free to govern themselves provided they did not deviate from religious orthodoxy. Both the Protestant Reformation and the Catholic Counter Reformation strengthened the commitment of the universities to the defense of orthodoxy. By the seventeenth century Protestant and Catholic universities alike saw the defense of their respective doctrines as their principal mission.[2] They were disinterested in the rise of science, so important a part of the intellectual heritage of the seventeenth century. The anti-scientific trend continued to characterize universities until the end of the nineteenth century, most scientific research being done outside of the universities. In Britain, for example, the Royal Society, incorporated in 1662, and other similar institutions fostered advanced scientific studies and research.

In Europe, the universities of the eighteenth century both contributed to the destruction of the ancien régime and were themselves the products of that society's partial demise. As the sovereign territorial state arose out of the earlier feudal monarchies, its princely rulers came to depend upon a professionally trained bureaucracy that served as the state's executive and administrative agency. Unlike feudal officials whose offices were dependent upon the inherited privileges of the traditional estates, the new civil servants constituted a "state-service class." In Prussia, for example, members of this class consisted of the administrative and judicial bureaucracy, teachers and professors in state controlled educational institutions, and the ecclesiastical hierarchy of the established Lutheran Church. They qualified for office appointment through university study and certification. The modern state required these officials in order to advance the processes of political centralization and rational organization. The function of the university was to train and foster the development of this class.[3] This was even true of students of theology and philosophy. Most of these students were destined for positions as state officials, either in the universities or in the hierarchy of the established church. Ironically, by virtue of their training and their role in the state-controlled hierarchy, religious officials were agents of modernization and rationalization, at least in Germany with its tradition of the "union of throne and altar".

The idea that professional and scientific training, apart from law, medicine and theology, constituted an important part of the university's mission did not develop until the latter part of the nineteenth century. As late as 1852, John Henry Newman asserted that the fundamental task of the university was to prepare young men "to fill any post with credit, and to master any subject with facility." Newman was convinced that a classical, liberal education could fulfill that role.[4] By contrast, in Germany the model of the university as a complex of graduate schools performing advanced research and experimentation took hold in the nineteenth century and served as a model for universities throughout the world.

Just as the German university contributed to the rationalization and the centralization of the modern state, so too the expansion of its role met the needs of and fostered the rise of the industrial state in the second half of the nineteenth century and the twentieth century. As a result, the German model was widely copied in the industrializing world. In 1872 President Charles W. Eliot called for the creation of a Graduate School of Arts and Sciences at Harvard. The school was created in spite of strong faculty opposition. Moreover, the tradition still continues that only graduates of Harvard College are truly Harvard men and women whereas recipients of advanced Harvard degrees share that distinction to a lesser degree save when the University embarks on a fund-raising campaign.[5] Johns Hopkins University, founded in 1876, was the first American university primarily devoted to graduate rather than undergraduate studies. The University of Tokyo, Japan's most prestigious institution of higher learning, was founded the next year as part of Japan's rapid modernization program and her determination to catch up with the West. Towards the end of the nineteenth century, American universities following the German model awarded the first Ph.D's. In 1881 Yale was the first to do so.

Undoubtedly, the most important single event in American higher education in the nineteenth century was the signing of the Morrill Act by President Abraham Lincoln in 1862. Under the act, Congress granted 30,000 acres (12,141 hectares) of land for each representative and senator "for the endowment, support and maintenance of at least one college where the leading object shall be—without excluding other scientific and classical studies and military tactics—to teach branches of learning as are related to agriculture and mechanical arts." The Morrill Act thus established the basis for the extraordinarily successful American land-grant system of agricultural education and research. To this day, the land-grant colleges offer programs of study that lead to both undergraduate and graduate degrees in the various branches of agricultural sciences and the American institutions serve as models for schools throughout the world.

The purpose of the act was further advanced in 1887 when Congress passed the Hatch Act that provided for basic and applied agricultural research to be conducted by the state colleges of agriculture in cooperation with the U.S. Department of Agriculture. As a result, agricultural experiment stations were established in16 states. Today, such stations exist in all 50 states. Many of the colleges established as a result of the Morrill Act have become great universities. These include Ohio State University, Michigan State University, Cornell, the University of Maryland, the University of Georgia, the University of Florida, the University of Wisconsin, the University of Illinois, and the University of West Virginia. Many of the land-grant colleges bear the designation "Agricultural and Mechanical University" such as Texas A. and M. and Florida A. and M., indicating the practical intent in their establishment and funding. In the late 19th century, the rationalization of agriculture and the growth of industry were the most important motives for the creation of the American university system. Yet another development of

considerable importance was the passage by Congress in 1914 of the Smith-Lever Act that provided for the creation of the agricultural extension service that taught improved agricultural techniques to farmers. This form of adult vocational education can be seen as a precursor of today's system of lifelong learning.

As late as the end of the nineteenth century, American institutions of higher learning were relatively few in number with a much smaller number of students from relatively homogenous social and ethnic backgrounds than those enrolled in today's mega-universities. The land grant schools contributed greatly to the tremendous expansion of the American university system in the twentieth century. Indeed, in America as elsewhere, war has been the mother of the modern university system. On June 14, 1940, James Bryant Conant, president of Harvard University and a distinguished research chemist, accepted the invitation from Vannevar Bush, president of the Carnegie Institution, to establish a scientific research committee that would work with the White House to help prepare America's defense and to lay the foundation for massive American aid to England in the coming war. During World War I, chemists and physicists, including Conant, worked in government laboratories. During World War II, the government contracted its projects to the universities themselves instead of building concentrating on its own laboratories. Franklin Delano Roosevelt's decision to fund the Manhattan Project, which culminated in the successful creation of the atom bomb, was the result of an approach to the President by Albert Einstein and other physicists to alert him of the military potential of nuclear fission. Physicists first produced plutonium at the University of California at Berkeley. On December 2, 1942, the first man-made, self-sustaining nuclear reaction was achieved in a squash court beneath the unused football field of the University of Chicago under the leadership of Enrico Fermi. [6] Nor were the physical sciences the only disciplines that expanded during the war. The war created a greatly enlarged demand for economists, sociologists, demographers, political scientists, psychologists, managerial experts, historians, cryptographers, professionals skilled in foreign languages, and, in general, possessed of knowledge concerning both allied and enemy countries. This demand was largely met by America's colleges and universities.

A telling example of the military significance of modern universities occurred in the nineteen-thirties and forties with the emigration from Europe of a very important segment of that continent's scientific and scholarly community, enabling America's universities to achieve world-class status for the first time. Many of the scientists responsible for the bomb, including Einstein and Fermi, were Jewish refugees who had been expelled from their university posts in Nazi Germany and Fascist Italy and faced extermination in Europe. Had the Europeans permitted these scientists to remain at their posts, the war might easily have had a different outcome.

If I may be permitted a personal note on this subject, I received my university training in the United States in the nineteen-forties and fifties and personally profited from the presence of the refugee scholars on the faculties of the institutions I attended. They enriched my training and made it possible for me to receive a world-class education. I remember especially the Jewish theologian Abraham Joshua Heschel, Paul Johannes Tillich, the great Protestant theologian, Eugen Täubler, formerly Professor of Classics at Heidelberg, Samuel Atlas, a Neo-Kantian scholar from Marburg, and Julius Lewy, formerly of the University of Giessen, and many others. Apart from my direct contact with these scholars, their presence in the United States had a transformative effect upon American culture. Although not a scientist but a historian of religion, I am deeply indebted to the refugee scholars. Murderous German hatred made an enormous

contributed to the elevation of many of the best American universities to the pre-eminent position they now hold.

As noted above, the university system expanded rapidly both in the United States and overseas after World War II. Thousands of new institutions were established, reflecting the increased demand for higher education in an increasingly complex, technological world. Returning war veterans alone were responsible for a pent-up demand for practically oriented higher education as did the pent-up demand for products unavailable during the war and the work of reconstruction that followed war's devastation. The expansion contributed to profound changes in economic and social structures throughout the worlds. Old élites were either displaced or compelled to accommodate new knowledge-based élites whose upward mobility was based upon their university training.

In the United States, the Cold War played a crucial role in the further expansion of the university system. Sophisticated weapons of all sorts, both nuclear and non-nuclear, the hardware and software necessary for their delivery systems, and the systems of defense developed in the post-war period all rested upon a university-created knowledge base. Inevitably, there were civilian spin-offs, including the invention of the transistor, the semi-conductor, the micro-processor and other types of computer chip. Both the imperatives of the Cold War and the expansion of global communications, commerce, finance, and transportation required a concurrent expansion of personnel in the history, culture, languages, religion and economics of distant lands. The sheer size of the enterprises necessary to maintain civilian and military activities created an unprecedented demand for skilled managers. This led in turn to the proliferation of business schools and schools of public administration. Almost all of the advances of the post-war period have been knowledge-based to a far greater extent than ever before. To meet the demands of the new situation, governments, especially the U.S. federal government, were willing to render an unprecedented measure of support to institutions of higher learning and their students.

The establishment of research centers devoted to area studies such, as the Soviet Union, the Middle East and East Asia, was another post-war development linked to the Cold War. These centers received generous government support, often with C.I.A. funding. As a result, the number of Americans trained in foreign languages, political science, economics and sociology increased greatly.

Undoubtedly, one of the most important Cold War enterprises involving government-university cooperation was the development of the Internet. The network system originated in 1969 in a U.S. Department of Defense program called ARPANET (Advanced Research Projects Agency Network). Its purpose was to provide a communications network for organizations engaged in defense-related research that was secure and survivable in a military catastrophe. Researchers and academics in other fields began to use the network to communicate with each other. This led the National Science Foundation (NSF) to take over much of the TCP/IP technology from ARPANET and establish a distributed network of networks capable of handling far greater traffic. During the 1990's there was a quantum leap in the growth of the Internet as a result of the development in 1989 of the World Wide Web, the Internet's most important information retrieval system. The Web gives users the ability to retrieve an extraordinary array of documents, graphics, and audio and video files connected to each other by hypermedia links that permit easy access to related documents and other files

anywhere on the global network. Initially, the Web was text-based, but with the 1992 creation at the National Center for Supercomputing Applications at the University of Illinois of Mosaic, a Windows-like browser, it became possible for users to manipulate graphics applications over the network just as they had been doing on their individual personal computers. What was initially a survivable method of scientific and military communication became the most comprehensive data and information base in all of human history. Never before had so powerful an instrument of information gathering and exchange been available to human beings. More than any other device, the Web created the practical basis for the intellectual, academic, commercial and financial development of the Information Age.

A large proportion of the post-war university students and faculty were the offspring of parents who had enjoyed no comparable educational advantage. The upward mobility of both groups and the destabilizing consequences of the ongoing technological revolution, combined with the tensions of the Cold War, led to occasionally violent student protests. In France, the most widespread protests occurred in May 1968, *les Jours de Mai*. The protests began at the University of Nanterre and quickly spread to the Sorbonne in Paris. In Mexico City, government forces fired on student demonstrators in Tlateloco Square on October 2, 1968. The government claimed that 40 students had been killed. Other witnesses claimed they saw 700 bodies in square. In the United States, the student protest movement sought to desegregate American academic institutions and to bring the war to an end. On May 4, 1970 Ohio National Guardsmen aimed their rifles at unarmed students at Kent State University who were protesting President Nixon's decision to invade Cambodia. Two girls and two boys were killed in the volley.

The movement to desegregate the universities was quickly followed by a massive and controversial effort to make both higher education and university employment at all levels available to hitherto underrepresented minorities by legal and bureaucratic means. The effort entailed a reappraisal of the qualifications deemed necessary for entrance into university life as a student, faculty member, or administrator. It also led to a reappraisal of the core curriculum. Affirmative action at American universities was followed by a demand for ethnic studies and an unprecedented emphasis on the diversity in the student body, faculty, and the curriculum. As a result, there has been an increase in ethnic nationalism, separatism and racial tension on many American campuses.

With the end of the Cold War, government support for higher education has diminished. There has also been a fragmentation of whatever value consensus existed while the West faced a common adversary. The fragmentation is manifest in politics, religion, society and morals, as well as in university life. In addition, the quality of urban life has deteriorated, especially among members of those classes whose educational deficits prevent them from escaping vocational redundancy. Patterns of behavior have developed among a significant proportion of the vocationally redundant that strongly diverge from those of the majority culture. The problem is especially serious for those older universities, such as Yale, the University of Chicago, and the University of Pennsylvania, located adjacent to deteriorated, high-crime urban neighborhoods.

At the same time, universities are among the principal agents for leadership in the contemporary global economy. During the week that I completed work on this essay, the world went through a global financial crisis in which the financial markets in every part of the world instantaneously affected each other. A large drop in the Hong Kong's Han Seng index immediately affected the equity markets in Europe, Japan, Korea and the

United States. When the markets closed in New York, attention was riveted on the opening of the markets in Australia, Singapore, Hong Kong and Tokyo. Never before in human history had so many people of so many different cultural traditions participated in what has indeed a single global market place. That market place had been made possible by the advent of the Information Age that has completely transformed the *meaning of place* for the contemporary university. There are, of course, a number of universities for which place will always be overwhelmingly important. These institutions include older institutions such as Oxford, Cambridge, the Sorbonne, and Harvard. In the United States, they also include many huge state and private institutions such as the Universities of Washington, Virginia, Georgia, Florida State, Wisconsin and Stamford.

Nevertheless, place has had a diminishing importance for many, perhaps most, academic institutions. Sophisticated information technology not only makes it possible for scholars and scientists jointly to work on scientific and scholarly projects while domiciled in locations at great distances from each other. Highly developed forms of Information technology, such as the World Wide Web, have drastically reduced the cost of delivering interactive content anywhere in the world. It is now feasible to make qualified instructors and their courses available to students throughout the world and at any time. In the not-too-distant future, advanced software may make possible simultaneous translation into any of the major languages. Nevertheless, it is highly probable that English will continue to gain ground as the universal language of the information age.

Several forces have converged to create an enormous demand for new approaches to the delivery of educational content: In the developed world, technologically-induced vocational redundancy compels an ever-increasing number of adults to seek training for vocational slots other than those for which they originally prepared. This is as true of those with university degrees as those who have little or no advanced schooling. In the world of emerging markets, such as Eastern Europe, China, India, Pakistan, Southeast Asia, and Latin America, a large number of men and women seek advanced education in either domestic institutions or overseas in order to qualify for current and future vocational slots. At the University of Bridgeport, for example, over 40 students from the Peoples Republic of China are currently enrolled in our MBA program. In addition, we are in the process of working with institutions in Dubai and Abu Dhabi, the United Arab Emirates, and Karachi, Pakistan to establish branch institutions at which approximately 1,800 students will work for University of Bridgeport degrees in business administration, computer engineering and computer science. We are also in the process of establishing a branch center in Montevideo, Uruguay.

The education sought by today's students differs markedly from that sought as little as a decade ago. Some authorities suggest that an *emerging learning franchise* is in the process of joining the teaching franchise. The teaching franchise is defined as "the current system by which teaching and the awarding of course credits and degrees are bundled together in accredited institutions of higher education."[7] By contrast, the learning franchise "provides access to powerful learning systems, information and knowledge bases, scholarly exchange networks, or other mechanisms for the delivery of learning."[8] Michael Dolence and Donald M. Norris observe that "learning modules are open to anyone who wishes to access them and has the power to compensate the provider."[9] The latter system is more suitable to the needs of a huge number of Information Age workers who must constantly enhance their knowledge as their fields of endeavor are transformed and in many cases their vocational roles become redundant. The traditional

curriculum will not disappear but the majority of the learners will seek and only pay primarily for that content which they deem relevant to the jobs they either have or to which they aspire.

The Information Age thus constitutes a new and revolutionary new environment for universities. In the twenty-first century, the most important test for traditionally constituted universities will, in all likelihood, be meeting the challenge of the Information Age. If the universities fail, other institutions will undertake the task of post-secondary school learning. Already, many large corporations have created their own educational institutions to meet their own specific training requirements. These include Disney University, Motorola University, Hewlett-Packard University and McDonald's Hamburger University. McDonald's, for example, trains employees in 65 countries. It can offer simultaneous translations in 18 languages on its U.S. campus. The training offered by these institutions is primarily practical and highly specialized but it is the training Information Workers need to advance their careers or even to retain their positions.

Already institutions have come forth that appear to meet the needs of information-age. The University of Phoenix is the largest private university in the United States today. It is a private, for-profit institution, with forty-seven learning sites in Florida, Louisiana, Puerto Rico, Michigan, Colorado, Washington, Oregon, California and Nevada. In the past decade it has grown from a student body of three thousand to forty-thousand.[10] The school has been described as a "para-university" that possesses "the operational core of higher education-students, teachers, classrooms, exams, degree-granting programs-without a campus or even an intellectual life." William Gibbs, the university's president has said "The people who are our students don't really want the education. They want what the education provides for them-better jobs, moving up in their career ...They want it to *do* something for them."[11] Unlike traditional schools that consist largely of students preparing to enter the labor force, Phoenix accepts no one under the age of 23 and only those gainfully employed. About 75 percent of the students are partly reimbursed for their tuition by the corporations that employ them. Military personnel comprise nearly 40% of the full-time students in the university's Center for Distance Education and the university has Learning Centers on several military and air force bases.[12] In addition, the university offers courses on the campus of and in cooperation with Motorola University in nearby Tempe, Arizona. The degrees the university offers are primarily bachelor's and master's degrees in business, management, information technology, the health professions, and education.

In reality, the University of Phoenix and similar institutions, such as Magellan University and England's Open University, are responding to the real educational needs of the contemporary work force. In a small way the University of Bridgeport is becoming one of those institutions. Recently, the University of Connecticut opened a $70 million branch campus in Stamford, one of America's leading corporate centers. Financed by the taxing power of the state, the branch campus offers the same business and education degrees as the University of Bridgeport's Stamford Campus for considerably less money. Nevertheless, our enrollment in Stamford continues to grow because we offer weekend programs such as a two-year M.B.A. course with classes on both Saturday and Sunday. No other institution in the Stamford area offers such a schedule nor are they likely to. For many corporate employees seeking advancement, the University of Bridgeport offers the only feasible course schedule that promises a degree in a reasonable time frame.

Historically, American universities were the first to break with the traditional model of the university as an elite-training institution. By the end of the nineteenth century American universities were in the process of becoming middle-class institutions with a growing clientele. The Serviceman's Readjustment Act of 1944, or as it was popularly known, the GI Bill of Rights accelerated this transformation. The Bill sought to facilitate the reentry of returning veterans into civilian life by providing them with loans, educational subsidies and other benefits necessary for attendance at institutions of higher learning. The Bill reflected a fundamental difference between American higher education and education in France, Germany, the United Kingdom, Japan and Korea. In these countries, students are tracked for or excluded from university admission at a much earlier point in life than in the United States. While it is almost impossible to enter an elite American university without early tracking, the vast majority of American institutions are prepared to offer some kind of remedial training to compensate for secondary-school deficiencies. While both systems have their advantages, the imperatives of lifelong learning in the Information Age favor the less rigid tracking system prevalent in American education.

Another historic difference between American and European universities relates to the nature of university administration. As we have seen, the early European universities were corporations of students and masters free to govern themselves provided they did not deviate from religious orthodoxy. As universities evolved and huge resources were necessary to maintain them, they have become bureaucratically managed. In Europe, university administration has tended to take state bureaucracy as its model; in the United States the modern corporation has been the model in which the president is seen as the Chief Executive Officer of a not-for-profit corporation. The tendency to bureaucratize has been an inevitable consequence of the need to rationalize medium and large-scale enterprises.[13] Nevertheless, it has not been possible completely to rationalize the universities. Traditions such as tenure, faculty autonomy in curricular matters, and the generally guild-like structure of the academic profession have served as a break in a time of growing technologically-fostered economic demands, limited resources and diminished government support.

The restraints on rationalization have much academic merit. Nevertheless, enhanced rationalization is likely to be forced on all but the elite universities if they are to survive. The American system of community colleges and institutions such as the University of Phoenix are in the forefront of the movement towards rationalization. Moreover, the University of Phoenix is wholly owned by the Apollo Group, Inc. Its shares are listed on the NASDAQ and the university publishes a daily report on the Internet of their performance. At a time when most universities are having difficulty meeting the exploding infrastructure demands of the Information Age, the University of Phoenix has proven to be a highly profitable enterprise for the shareholders of its parent corporation. It has thus met the ultimate test of rationalization, market success.

As stated above, there is little danger that elite institutions will be compelled to rationalize to the point where advanced scientific research and disinterested scholarship becomes difficult, if not impossible, for them. A more likely scenario is that the university system will replicate trends in society at large. In the larger society, the economic gap between the very affluent and the rest of the population is growing ever wider. The same tendency is visible in the gap between elite academic institutions and those institutions that train the Information Age work force. Elite private institutions do not need to meet the pedestrian demands of the market place. They will continue to flourish through the

largesse of alumni and corporations. The act of significant giving to such institutions confers status. In addition, elite institutions can expect some measure of generous federal funding to continue. When a research project is deemed a matter of urgent public interest, the government is likely to invest in those institutions that promise the least risk. Similarly, the great American state institutions are likely to continue to offer a degree of resistance to thorough-going rationalization because they are in the business of training regional elites. Nevertheless, most non-elite public and private institutions will, in all probability, have no choice but to commit to increasing rationalization if they are to survive. Since market conditions prevail at the majority of such institutions, that process is well under way.

A word is in order on the subject of religion and the universities. In Europe, with its tradition of established churches, non-members of the established churches were barred from taking degrees and even attending courses until well into the nineteenth century. In the United States, with few, if any, exceptions, the older private universities were founded by religious communities that limited the admission of non-members and barred them from faculty positions. By contrast, the state institutions in the United States did not bar students because of religious affiliation. Nevertheless, with the exception of the traditionally Black institutions, the state universities were for a very long time predominantly white and Protestant in leadership and ethos. Indeed, a principal reason for the founding of America's many Roman Catholic universities was that community's desire to provide their young with an education whose curriculum was more in harmony with its values and beliefs.

In the post-war period, many American private institutions have been secularized although some vestiges of the old affiliations persist in the office of university chaplain and the university chapel. In place of the old establishment system, religious communities generally make provision for the spiritual needs of their students by attaching clergy and religious foundations to the university. Because late adolescence is usually a period of intensified religious interest and commitment, religion is likely to continue to play a role of some consequence in those institutions in which the strictly pragmatic emphasis of vocationally focussed institutions does not predominate. In the vocationally focussed institutions like the University of Phoenix, religion is unlikely to play a significant role, but such institutions do not seek to enroll late adolescents in any event.

In recent years religion has played a distinctive role at the University of Bridgeport. Chartered as a non-sectarian institution, the University endured the longest and the bitterest academic strike in American history between 1989 and 1991. There were no winners. With an infra-structure capable of serving the 10,000 students that attended the school in the early nineteen-eighties, the institution's total student enrollment declined to 1,100. At that point the Professors World Peace Academy offered to enter into partnership with the school, subject to the approval of the accreditation bodies, by granting the University $50.5 million in exchange for the right to nominate sixty percent of the members of the Board of Trustees. The commitment was later raised to $110,000,000.

After considerable negotiation and some litigation, the offer was accepted in 1992. The agreement between PWPA and the University was approved by the Connecticut Department of Higher Education and the New England Association of Schools and

Colleges on the condition that the University would retain its strictly non-sectarian character. Were the University to violate that condition, it would loose its accreditation. That agreement has been scrupulously maintained for the past five years. The University of Bridgeport provides the unique example of a non-sectarian institution whose continued existence has been guaranteed by the Rev. Sun Myung Moon and organizations founded by him. Because of the international character of the highly diverse student body, there are Protestant, Catholic, Eastern Orthodox, Muslim, Hindu and Unification religious groups active on campus. Thus, the non-sectarian character of the institution has proven to be the only appropriate means by which the University can be equally hospitable to the religious needs of its global student body in the Information Age.

Finally, universities will continue to face problems in their relations to both the corporate world and the state. In a knowledge-based society, universities are wealth-creating institutions. This trend is likely to accelerate in the Information Age. Among the issues to be resolved, if possible, are the following: Universities will either agree to train corporate personnel and enter into agreements for profit-making endeavors in fields such as biop-technology, computer science, computer engineering, nuclear physics, or other institutions including the corporations will do it in their stead. How shall universities deal with such contractual arrangements when foreign corporations are involved? This is already and issue with some Japanese corporations and American universities as well as American multi-national corporations overseas. When such arrangements are entered into, is it proper for universities to permit the foreign corporations to bar access to their campus facilities and to the work done there? Are there fields such as weapons production, counter-intelligence, and police training for foreign governments that ought to be avoided. To what extent, if any, ought faculty members involvement in corporate life be limited?

With regard to the state, no university can exist wholly independent of the state. All private universities in the United States are highly regulated by state departments of education or boards of regents. They are also regulated by the federal Department of Education and its designated regional accreditation institutions such as the New England Association of Schools and Colleges. The university's fundamental power to grant legally recognized degrees rests upon state and federal licensing. Without federally guaranteed loans, it would be impossible for a large proportion of America's students to attend college or university. As a result, the state exercises considerable control over all universities. Bureaucratically mandated regulations govern hiring and enrollment practices, some budget priorities and procedural safeguards. One of the most controversial examples of such control has been "affirmative action," a program designed to overcome the effects of past discrimination by giving some form of preferential treatment in admission and faculty and staff appointment to primarily to some minorities and women. The term is usually applied to those programs that set forth goals and timetables required of schools receiving public funds. According to affirmative action statutes, the school must demonstrate a "good faith" effort to recruit minority students and to employ minority faculty. Critics of the system claim that the system has led to the establishment of state-enforced racial quotas. The system is highly controversial and has recently met with considerable opposition. State mandates also cover elements of the curriculum. In some cases colleges and universities are required to offer courses on religious and ethnic diversity.

To the extent that more schools follow the University of Phoenix model, insistence on "affirmative action" is likely to diminish. Such schools are concerned with *successful outcomes*. They are interested in hiring the instructor most qualified to give the instruction required by their working-force student population. Were they to permit any extraneous consideration to determine their choice of either faculty or curriculum, they would be subject to the harsh judgement of the most impersonal of all arbiters, the market place.

These are but some of the issues that will confront the colleges and universities in the twenty-first century. Of necessity, this discussion is not comprehensive. Nevertheless, it offers an indication of the transformations this observer believes are taking place in the Information Age. If this observer were to summarize his views in a single sentence it is as follows: The market place will play an ever-increasing role in the structure, curriculum, curriculum delivery, research and nature of the student body in the Information-age university.

---

[1] I wish to acknowledge the invaluable assistance I received from Dr. Thomas Ward of the University of Bridgeport in the research and writing of this paper.

[2] The oft-repeated rationale for the founding of Harvard College, America's oldest institution of higher learning, in 1636 was "to advance Learning and to perpetuate it to Posterity; dreading to leave an illiterate Ministry to the Churches." See Richard Norton Smith, *The Harvard Century: The Making of a University to A Nation* (New York: Simon and Schuster, 1986), p. 15.

[3] See John Edward Toews, *Hegelianism: The Path toward dialectical humanism, 1805-1841* (New York: Cambridge University Press, 1985), pp. 14-16.

[4] John Henry Newman, *The Idea of a University,* Frank M. Turner, ed. (New Haven: Yale University Press, 1996).

[5] See Henry Rosovsky, *The University: An Owner's Manual* (New York: W.W. Norton, 1990), p. 133. Rosovsky served as Deanof Harvard College and as a member of Harvard's senior governing board, the seven- person "self-perpetuaing" Harvard Corporation.

[6] See Richard Norton Smith, *op. cit.*, pp. 149 ff.

[7] Michael C. Dolence and Donald M. Norris, *Transforming Higher Education: A Vision for Learning in the 21st Century* (Ann Arbor, MI: Society for College and University Planning, 1997), p. 9.

[8] Dolence and Norris, *op. cit.*, pp. 9-10.

[9] Dolence and Norris, *op. cit.*, p. 10.

[10] Ethan Bronner, "An Adults-Only, For-Profit University Races to the Top," *New York Times,* October 15, 1997. See also James Traub, "Drive-Thru U.," *New Yorker*, October 20 and 27, 1997.

[11] Traup, *loc. cit.*

[12] Fort Huachuca, Kirtland Air Force Base, Nellis AFB, and Edwards AFB.

[13] Max Weber's 1919 reflections on bureaucracy retain much of their relevance today. See Max Weber, "Bureaucracy" in H. H. Gerth and C. Wright Mills, eds., *From Max Weber: Essays in Sociology* (New York: Oxford University Press, 1946), pp. 215 ff.