

Preparing, Recruiting, Developing, Retaining, and Retiring
The Faculty of the Future:
The View from South of the Border

James J. Duderstadt
President Emeritus and University Professor of Science and Engineering
The University of Michigan

Annual Meeting
The Association of Universities and Colleges of Canada
Calgary, Alberta
October 4, 2000

There is an old saying (sometimes attributed to a well-known private university in northern California): “A great university is run by its faculty, for its faculty.” Naturally, as a university president I would have contested this claim, both in terms of the principal stakeholders of the university and who should lead it. But now that I am back on the faculty, it actually doesn’t sound like such a bad idea!

After all, the principal academic resource of a university is its faculty. The quality and commitment of the faculty determine the excellence of the academic programs of a university, the quality of its student body, the excellence of its teaching and scholarship, its capacity to serve broader society through public service, and the resources it is able to attract from public and private sources.

The Canonical Career

Although there are significant differences among disciplines and institutions, the usual faculty career pattern is:

- 5 to 10 years in a Ph.D. program at a major research university
- 2 to 5 years in a postdoctoral position (or other nontenure track position)
- Appointment to a tenure-track faculty position as assistant professor
- Progression through the ranks from aP to AP(with tenure) to P, roughly six years at each stage, with possible shifts among institutions to keep the process moving ahead
- 30-40 years in a faculty career (with possible detours for administration or service)
- Retirement at age 65 to 70, followed by emeritus status (and fading away into the sunset)

Variations on a Theme

Of course, there is always an ebb and flow in the academy. Both the United States and Canada saw major faculty growth in the 1960s, tracking the growth in college-age students resulting from the post WWII baby boom. This was followed by a stagnant academic market in the 1970s and 1980s. While Ph.D.s driving taxicabs was largely a myth, faculty appointments were few and far between. It was anticipated that the logjam in the academy would be relieved by faculty turnover in the 1990s as faculty

members approached retirement age. And, indeed, the faculty did age. But the projected turnover and opening of new faculty positions never appeared, due to the removal of mandatory retirement caps (traditionally set at 65 or 70) as a consequence of federal age discrimination laws, coupled with the entry into the academic marketplace of scientists and engineers from the dismantling of the defense industry and disintegration of the Eastern bloc following the end of the Cold war.

There is also considerable variation in the canonical career pattern due to diversity among the faculty. Many tend to think of the faculty as a homogeneous group, all engaged in similar activities of teaching and research, and all experiencing similar stresses of publish or perish, tenure or out. Yet there is as much diversity among faculty and their roles as across any other aspect of contemporary society. The range of faculty activities covers a wide spectrum: teaching at the undergraduate, graduate, professional, postdoctoral, and continuing education levels; basic and applied research; scholarly modalities ranging from solitary individuals working in the library to large teams of scientists working in sophisticated laboratories; disciplinary versus interdisciplinary versus nondisciplinary teaching and research; and public service in myriad forms.

There are many faculty members of the “Mr. Chips” stereotype: dedicated classroom teachers, committed to the intellectual development of their students, and limiting their scholarship to an occasional research paper. But contrast this with a professor of internal medicine, with long hours devoted to patient treatment and care, engaged in ongoing efforts to attract the research funding to support a laboratory and students, teaching in a one-on-one mode medical students and residents, and perhaps trying to start a spin-off company to market a new piece of medical technology. Or the professor of violin, working one day with masters classes of students and performing the next on the concert stage. Or the engineering professor, teaching large classes of undergraduates, managing a state-of-the-art research laboratory staffed by research assistants and graduate students, serving on high-level government advisory committees, and working to develop patents into marketable products. All are valued members of the university faculty, but their activities, their perspectives, their needs, and their concerns are remarkably diverse.

So, too, the role and activities of a faculty member change considerably over the course of a career. Most faculty members concentrate early in their careers on building scholarly momentum and reputation and developing teaching skills. Once the early hurdles of tenure and promotion have been achieved, professors become more involved

in service both within and external to the university. Some become involved in deeper games where they use their intellectual power to shape their field of scholarship. Others assume important roles as advisors or consultants to government or industry. Still others become campus politicians, representing their colleagues in faculty governance. Still others take on administrative roles as chairs, deans, or perhaps even university presidents. Yet, despite this extraordinary diversity of faculty across fields and careers, there is a tendency both in perception and in policy to regard all faculty members the same, as if all were assistant professors in history or economics.

Perhaps the greatest source of variation in the academy is due to the great diversity in the nature of colleges and universities. Today there are roughly 700,000 faculty in the United States, with 28 percent in research universities, 26 percent at comprehensive institutions, 20 percent at two-year colleges, 8 percent at liberal arts colleges, and the remainder in more specialized institutions such as proprietary schools. Of these, about two-thirds hold full-time positions, with the majority of these tenured. The majority of faculty members work in two-year or four-year public colleges and universities where teaching is the primary role. Although research and service are technically part of their portfolio, their heavy classroom loads and limited intellectual resources (laboratories, libraries, and graduate students) make scholarship difficult. Furthermore, the faculty at most institutions are unionized, and hence their relationship with their administration and trustees tends more toward that of a negotiated labor-management contract than shared governance.

In sharp contrast, faculty members in research universities do enjoy the opportunity to participate in teaching, research, service, and administrative activities on a far more balanced basis. Although there is great diversity in faculty roles throughout the contemporary research university, determined by academic discipline, career level, and administrative assignments, all faculty are both encouraged and expected to maintain some level of activity in scholarship or creative work and to teach at the graduate and professional level. Yet, with the freedom and opportunity to undertake broader roles than simply classroom teaching comes an additional responsibility: Research university faculty members are expected to generate a significant fraction of the resources necessary to support their activities. That is, most faculty members at research universities are expected to be entrepreneurs as well as teachers and scholars.

There is also an ever-increasing diversity of the faculty with respect to characteristics such as gender and family responsibilities suggesting that the

relationship between the faculty and the university must become more flexible and capable of change. For example, the tenure probation period frequently falls during the period of life when many faculty members want to start families. Rather than adapt to this reality, many universities continue to insist on adhering to traditional models, often forcing faculty members to choose between professional advancement and family responsibilities.

Some Recent Trends

The number of colleges and universities in the United States has doubled since the 1950s, expanding from 1,870 to 3,700 in 1996. Currently one-third of the college age population will continue on to college, while almost two-thirds will eventually receive some level of college coursework (although not necessarily a degree).

Over the past two decades, the post-WWII baby boom has turned into a bust, and the U.S. college age population has declined by more than 21%, from 21.6 million in 1980 to 17.0 million in 2000. But this decline bottoms out this year, and the college age population will grow 13% to 19.3 million by 2010. This suggests there will be yet another wave of expansion in higher education in the decade ahead.

The United States awards the highest number of doctoral degrees in science and engineering. In 1997 it awarded 26,800 degrees, more than twice the number awarded by any other nation (and comparable to the total 27,800 awarded by Germany, France, and the UK). But Ph.D. production in the United States is not driven by the demand for faculty. Rather it is determined by federal research funding patterns in the sciences and by university needs for graduate teaching assistants in undergraduate education. The waves of expansion of doctoral programs in the 1960s and 1980s coincided with federal research investments reflecting the space race and the Cold War.

In 1998, an estimated \$26.3 B was spent for academic research, distributed among the federal government (\$15.6 B), universities (\$5.0 B), state and local government (\$2.1 B), industry (\$1.9 B), and other sources such as foundations (\$1.8 B). Three federal agencies are responsible for over 80% of federal research support: the National Institutes of Health (58%), the National Science Foundation (15%), and the Department of Defense (10%). However during the 1990s there has been a massive shift in federal research support away from the physical sciences and engineering toward the life sciences. With Congressional approval of the FY2001 budget, the NIH

research budget (\$19 B) has grown to be almost four times the size of the NSF budget (\$4.5 B). As a result, there has been a very significant expansion of doctoral and postdoctoral students in the biomedical sciences far exceeding the number of permanent faculty positions in these fields.

As we noted earlier, there were numerous predictions that faculty retirements would lead to shortages during the 1990s. The National Science Foundation projected shortages in scientists and engineers resulting from the demographic decline following the post-war baby boom and bust. Bowen and Rudenstine similarly projected shortfalls in the humanities and social sciences resulting from retirements. And indeed the faculty has aged, as evidenced by the fact today roughly one-third are over the age of 55. Yet there have been surprises. The elimination of mandatory retirement caps, coupled with the defined-contribution nature of the retirement programs of most U.S. universities (discussed later in this paper) has led to more faculty deferring retirement until well into their 70s. Furthermore, the end of the Cold War released large numbers of scientists and engineers both from the defense industry and immigrating from the Eastern bloc. Finally, as we will note later, there has been a pronounced shift from tenure-track to non-tenure track and part-time faculty as institutions attempt to achieve greater flexibility.

The result has been a continuation of the flat market of the 1980s for academic appointments, despite a significant growth in the number of doctorates and post-doctorates in some fields. Furthermore, the attrition rate among faculty remains high, with fewer than one-third of new doctorates hired by research universities obtaining full-time faculty positions, less than half the percentage of the early 1970s. Most of the net growth in doctoral employment in research universities has been due to the increasing presence of women in the academy.

Preparing Faculty

Graduate Education

It is not surprising that during these times of challenge and change in higher education, the nature and quality of graduate education has also come under scrutiny. Traditionally the faculty and their universities prefer to focus concerns on the adequacy and nature of financial support for graduate education. Graduate students are more concerned with the job market for graduates and the time to obtain a degree. The federal

government has raised questions about the number of advanced degrees relative to market needs and the high percentage of foreign graduate students.

But there are deeper and more troubling concerns. The current highly specialized form of graduate education may no longer respond to the needs both of our students and our society. The attrition in many graduate programs has risen to unacceptable levels, with more than 50% of those who enroll in Ph.D. programs failing to graduate (compared to attrition rates in law and medicine of less than 5%). Tragedies such as graduate student suicides and emotional instability suggest that the relationship between student and advisor may need to be reexamined. The increasing trend toward unionization of graduate student assistants on many of our larger university campuses suggests we may need to reconsider their broader role in supporting our university teaching and research.

The production of Ph.D.s by American universities increased by a factor of four from the 1960s to the 1990s. But the end of the Cold war, the rapid growth of international competition in technology-based industries, and various constraints on research spending have altered the market for Ph.D.s. Is there an oversupply of Ph.D.s? While unemployment rates for recent Ph.D.s have remained very low, there do seem to be far more seekers of faculty positions than there are available positions. There are also some worrisome indicators of weakness in the market, such as the substantially longer delays in the initial placement of new graduates. These signs suggest that the current oversupply of Ph.D.s—at least for academic positions—will continue and may well worsen in the near term as federal budget cuts hit even harder.

There are already signs that in some fields the production of Ph.D.s far exceeds the availability of academic or research jobs. For example, the rapid growth in federal research funding in the life sciences over the past decade has driven a 42 percent increase in the annual production of Ph.D.s, now estimated to be almost 2.5 times the number that can be accommodated by the academic market.¹ As a result, an increasing number of doctorates find themselves in temporary positions such as postdoctoral appointments or part-time faculty or research positions. More specifically, only about 60 percent of Ph.D.s in the life sciences have permanent positions six years after graduation. The average life scientist is likely to be thirty-five to forty years old before obtaining his or her first permanent job.

What about the impact of foreign graduate students on the market? The quality of America's graduate programs has long served as a strong magnet for attracting

outstanding international students. In fact, over the past decade, most of the growth in the graduate student population in American universities has been a result of the growth in the number of foreign nationals enrolled in these programs. The enrollment of domestic students has remained relatively flat or even declined in some cases.

The success of the United States basic research endeavor has relied to a large extent on individual effort, as reflected in the investigator-initiated grant process. This emphasis on individuals is strongly reflected in the promotion and tenure system at research universities. It is also reflected in our approach to graduate education. Ph.D. training is best described as an apprenticeship. Graduate students are expected to attach themselves early and tightly to individual professors. In fact, since many are supported by research grants, they are required to work on problems relevant to their faculty advisor's research grant with little opportunity to broaden their studies or their interests. In most universities, the faculty supervisor of a graduate dissertation becomes the primary determinant of the intellectual content, the duration, and the financing of the remaining education of the Ph.D. student, until the dissertation is written and the final dissertation defense is completed. In the best of circumstances, this final phase of graduate study can be very rewarding, since under the supervision of a skilled dissertation advisor, the graduate student learns the intricacies not only of basic research but also the trade of a faculty member. But this is also the point at which many of the problems arise.

Many faculty members have little experience in supervising graduate students, and abuses frequently occur. In some cases, faculty members are simply not adequately concerned about or attentive to a student's progress. In other cases they may even wish to prolong a student's studies so that he or she can continue to contribute to a key research project of the faculty member. There are also great differences in the nature of the relationship between graduate student and dissertation advisor among the disciplines. For example, in science and engineering, graduate students generally work side by side in the laboratory with faculty advisors, interacting with them almost on a daily basis. By way of contrast, in the humanities, it is not uncommon for a graduate student to meet with a dissertation advisor only a few times a year, clearly receiving very little guidance.

While the vast majority of faculty members regard the supervision of graduate students as both a significant privilege and sacred responsibility, there are inevitably cases of exploitation. Some faculty members adopt almost a feudal attitude, in which

graduate students are regarded first and foremost as serfs to work on their research projects rather than as students seeking an education and a degree. As a result, some graduate students are seriously abused, required to perform menial tasks unrelated to their education, spending unnecessary years to get their degree, and tolerating the most excessive examples of faculty irresponsibility.

The increasing trend toward unionization of graduate student assistants on the campuses of American universities is driven primarily by economic issues and power relationships. But it may stem in part from the abuse of graduate students that all too frequently occurs in our feudal culture of graduate education in which a single faculty member has complete authority over the academic progress, the career, and even the quality of life of a graduate student. Today sixteen of our largest university campuses have graduate student teaching assistant unions, including the Universities of Wisconsin, Michigan, and California, with more likely to follow in the years ahead.

Postdoctoral Education

Of course, graduate education does not end with the Ph.D. In many fields, an appointment as a postdoctoral fellow in a university research laboratory has become not only commonplace but effectively a requirement for a later academic position. To be sure, there are strong intellectual reasons for postdoctoral appointments in some fields. Perhaps this level of advanced training and specialization simply cannot be achieved within a conventional Ph.D. program. Or an individual may need the experience of working with a senior scientist to learn not only advanced research techniques but also the ropes of grantsmanship. Postdoctoral appointments also allow young scholars to accumulate the publication record necessary for a more permanent appointment.

There are other reasons for the rapid increase in postdoctoral appointments seen in many fields over the past two decades—from 16,829 in 1975 to 38,000 in 1997. We have already noted that in some fields such as the life sciences there is a current glut of Ph.D. production. As a result, although postdocs are supposed to be temporary, they have become a holding pattern for many young Ph.D.s who are unable to find permanent jobs in research or who need more time to assemble the kind of publishing record that such jobs now require. Many scholars spend five or more years in postdocs, frequently moving from one appointment to the next, in their unsuccessful search to find a more permanent appointment. This leads to what one scientist has called “the

Laguardia effect, in which many recent graduates are circling in postdoctoral positions, burning up very important and useful intellectual fuel, and waiting for their turn to land in a permanent academic or research position.”²

More significant, perhaps, is the role postdoctoral fellows play in the research enterprise. Unlike graduate students, postdocs have the sophistication to be highly productive in the laboratory or in a research group of senior scientists. They are highly motivated and work extremely hard, since they realize that their performance as a postdoc may be critical in attaining the faculty references necessary for further employment. And they are cheap, typically working at only a small fraction (20 to 30 percent) of the salary of a faculty member or research scientist. In fact, since most postdocs are not assessed tuition for their advanced training, in many institutions postdoctoral appointments are less expensive to support than graduate students.

Hence, it is not surprising that in many fields, the postdoctoral student has become the backbone of the research enterprise. In fact, one might even cynically regard postdocs as the migrant workers of the research industry, since they are sometimes forced to shift from project to project, postdoc to postdoc appointment, even institution to institution, before they find a permanent position. And, as with graduate students, they are all too frequently at the mercy of their faculty supervisor, with little university oversight or protection.

Most institutions make little effort to control the number or quality of postdocs, since these are identified, recruited, and supported through the efforts of individual faculty. (In fact, in recent surveys, some institutions did not even know the number of postdocs on their campuses.)³ There are few institutional policies governing postdocs, such as compensation or benefit policies or time limits on appointments. Few institutions have job placement services for postdocs, aside from the efforts of their faculty supervisors. The lack of institutional oversight of postdocs, coupled with the evolution of postdoc education in a number of disciplines into a virtual requirement for a tenure-track faculty appointment, has created an unacceptable degree of variability and instability in this aspect of the academic enterprise.

Recruiting Faculty

During the next decade, many if not most colleges and universities in the United States will experience significant faculty turnover. They will face the challenge and

opportunity to use these appointments to sustain and enhance the quality of their academic programs and their institutions more broadly. But they will also face the challenge of an increasingly competitive marketplace.

The Marketplace

Although many colleges and universities operate much like K–12 education with unionized faculties and negotiated compensation systems, the very best institutions function as meritocracies. The academy is usually both rigorous and demanding in its evaluation of the abilities of its members, not only in promotion and tenure decisions, but also in determining compensation. The promotion ladder is relatively short, consisting primarily of the three levels of assistant professor, associate professor, and professor. Hence the faculty reward culture is unusually one-dimensional, based primarily upon salary. Although faculty honors and awards are common in higher education, including endowed professorial chairs, faculty members tend to measure their relative worth in terms of salary. Most public universities are required by freedom-of-information laws to publish faculty salaries. In private universities, one's salary can usually be compared to with those of others either through the informal grapevine or by testing the marketplace by exploring offers from other institutions. Hence the faculty reward structure creates a highly competitive environment that extends beyond a single institution as a national or even global marketplace for the very best faculty talent.

Academic leaders such as deans, provosts, and presidents spend much of their time either attempting to recruit outstanding faculty members to their institution or fending off raids on their faculty by other institutions. Although there have been attempts in the past to impose certain rules of behavior on faculty recruiting, for example, through informal agreements that institutions will refrain from recruiting faculty just prior to the start of a new academic year or avoid using the promise of reduced teaching load to lure a research star—in reality it is a no-holds-barred and ruthless competition. And the richer and more prestigious the institution, the more aggressively it plays the game. To be sure, there is a certain pecking order in higher education, determined in part by the reputation of the particular academic program (not that concocted by *US News and World Report* but rather as determined by peers) and in part by wealth. Sometimes weather also helps, as the recruiting success of California universities clearly demonstrates.

Predators and Prey

But there is an insidious nature to this intensely competitive market for faculty talent. First, such recruiting efforts are a major factor in driving up the costs of a college education. Whether it is the size of an offer put together to lure a star faculty member away, or the counteroffer the home university puts on the table to retain the individual, both can seriously distort the broader faculty compensation patterns. Furthermore, such offers usually go far beyond simply salary and can involve a considerable "dowry" including laboratory space, research support, graduate and research assistant support, and, yes, sometimes even a reduced teaching load.

But beyond this, several of the wealthiest and most elite universities, Harvard being most prominent, play a particularly damaging role within higher education by preferring to build their faculties through raids on other institutions rather than developing them through the ranks from within. At these institutions, very few junior faculty have an opportunity for tenure, since most senior faculty positions are filled by scholars recruited away from other universities, where they have been nurtured and developed by these institutions at rather considerable expense. These elite predators attempt to rationalize the process by arguing that by seeking only the very best faculty from the broader marketplace rather than developing them from within, they create competitive forces that improve the quality throughout all of higher education." In reality they instead decimate the quality of programs in other universities by raiding their best faculty. Even unsuccessful attempts to raid faculty can result in a serious distortion of resource allocation in the target institution as they desperately attempt to retain their best faculty stars.

The faculty recruiting practices of several wealth private universities causes a similar concern. Most colleges and universities build their senior faculty ranks from within, by hiring and developing junior faculty. However, several elite private universities such as Harvard and Princeton prefer instead to build their senior faculty by raiding established faculty members from other institutions. Their vast wealth allows them to make offers to faculty members that simply cannot be matched by public universities. Most deans of major public universities can readily testify to the great effort expended to fend off raids on their top faculty by wealthy private universities.

The growing disparity in the resources available to public and private colleges and universities has made this competition even more of a challenge. During the 1990s, a booming equity market has driven extraordinary growth in the endowments of the most prestigious private universities. During the same period, these institutions were able to substantially increase tuition revenue, subsidized in part by generous federal financial aid programs that covered roughly 40 percent of their high tuition pricing. Yet during this past decade, many public universities have experienced erosion in state support that they were unable to compensate with tuition increases because of public and political pressures. As a result since the 1980s, public universities have fallen further behind their private university counterparts in expenditures per full-time equivalent student. In 1980 public universities expended 34 percent less in Education and General expenditures per FTE and 33 percent less in instruction-related expenditures per FTE than their average private university counterparts. In 1995 public universities expended 52 percent less in Education and General expenditures per FTE and 46 percent less in instruction-related expenditures per average FTE than average private universities.⁴

One important manifestation of this fiscal disparity is provided by the most important component of instruction-related expenditures, faculty salaries. Since 1980 salary disparities in all faculty ranks have increased significantly favoring private research universities. Prior to 1980, faculty salaries in the late 1960s and early 1970s were relatively consistent between public and private research universities only slightly favoring private university faculty, with the averages across all professorial ranks amounting to less than \$2,000. After 1980s, public-private university salary disparities began to increase drastically and have continued through the 1990s. In 1998 the difference in average salaries between public and private universities had grown to over \$14,000. Alexander notes that only three public Research I universities have improved upon their faculty salary market position since 1980 when compared to the average salaries of faculty at private research universities.⁵ Even among the nation's most distinguished public universities like the University of California at Berkeley and the University of Wisconsin faculty salary declines against the private university average have been considerable.

Given all these variables, one can think of higher education as a complex ecosystem, comprised of a wide variety of lifeforms. Most are benign and pastoral, such as the community colleges, comprehensive universities, and liberal arts colleges, which serve particular constituencies in a largely noncompetitive environment. In this

ecosystem, the public research universities would be competitive, but probably akin to elephants, slow of foot, and seldom directly combative. But, at the top of the food chain, are the intensively competitive predators, carnivores such as Harvard, that tend to feed on the rest, drawing away their best faculty and students through the use of their vast wealth, and leaving behind decimated academic programs in public universities.

When challenged about their predatory practices in faculty raids on public universities, the elite private institutions generally respond by suggesting a trickle-down theory. Such free-market competition, they argue, enhances the quality of all faculties, although here they promote the fundamental premise that the very best faculty members should be in the wealthiest institutions. Of course they usually do not acknowledge that in their predatory recruiting they are generally attempting to lure away outstanding senior faculty who have already benefited from years of support by public universities during their scholarly development. Nor do they admit—although they certainly realize—the damage that is done to the academic programs of public universities by their predatory practices.

But, as in all ecosystems, evolutionary adaptation does occur. As we noted earlier in this chapter, the vast wealth of the elite private universities does indeed depend on public largesse, in the United States through very generous tax policies that benefit both charitable giving and endowment investments. As the predatory faculty raiding practices of these predatory institutions become more aggressive and annoying, the large public universities may eventually be forced to unleash their most powerful weapon in defense: political clout. After all, influential as the elite private universities may be, they are no match for the political influence of flagship state universities, able to build and coordinate considerable political pressure in every state and within Congress. One can imagine a situation in which the pain from irresponsible faculty raids by wealthy private universities becomes so intense that the public universities are compelled to unleash the “T” word, tax policy, and question the wisdom of current tax policies that sustain such vast wealth and irresponsible behavior at public expense—both taxpayers and public institutions. Needless to say, this would be the equivalent of nuclear warfare and could damage very deeply both private and public institutions. But it could happen if the very wealthy private universities do not behave in a more responsible fashion by curtailing their current faculty raiding practices. Sooner or later the proletariat of higher education will pick up their pitchforks and march to the bourgeois palaces of the elite private universities, demanding “off with their heads”!

Compensation

Although faculty members in many two-year and regional four-year colleges and universities are unionized with rigid salary scales, most research universities and private colleges do not have collective bargaining, and faculty compensation is strongly merit-based. Faculty salaries depend strongly upon discipline and market value and vary widely across a university. For example, there can be a factor of ten difference in the salaries of professors in English and clinical disciplines such as medicine. Furthermore, although there is some correlation between salary and time in rank, it is not uncommon to see outstanding junior faculty in high demand specialties with salaries significantly higher than their senior colleagues.

In the United States there is an expectation that most faculty members will augment their salaries with outside activities. Although most faculty salaries are for the nine-month academic year, many professors receive additional summer support through research grants or extra teaching responsibilities. Since there is a long tradition that faculty members own the copyright for their written materials, many faculty benefit from royalties on textbooks and other writing. In many disciplines such as science, engineering, and business, faculty members are allowed to consult for business and industry for up to one day per week, as long as this does not interfere with their academic responsibilities. In some disciplines such as architecture, outside professional practice is not only strongly encouraged, it is mandatory. In the health sciences there is a strong tradition of clinical practice in university clinics and hospitals, and the income from such practice can be comparable to the faculty's base salaries. There is an increasing involvement of faculty in technology transfer, patenting key discoveries, benefiting from licensing royalties, and even holding equity interest in startup companies. Some universities have even seen junior faculty members petitioning for leaves of absence so that they can start a company and perhaps make millions through an IPO, only intending to return to the faculty if they fail.

Although salaries are important in faculty recruiting and retention, perhaps even more so are the resources provided for faculty research. For those in laboratory-based disciplines, space, equipment, and technician support become critical elements of the negotiation. Discretionary funds to support research assistants and graduate students also can be important. Of increasing importance to all faculty is the quality of the

information technology environment, computers, networking, telecommunications and the like. And perhaps most important of all is the availability of exciting and active colleagues in their field of interest.

Faculty members learn quickly that the best way to increase compensation and rise through the ranks is to periodically test their market value by exploring positions in other institutions. Although many professors would prefer to remain at a single institution through their career, the strong market-determined character of faculty compensation in the United States may force them to jump from institution to institution at various stages in their career.

Part-Time Faculty

Increasingly, the entry-level academic positions in a university available to recent graduates are part-time in nature. New Ph.D.s serve in a variety of roles, from postdoctoral fellowships to clinical faculty, lecturers, instructors, research scientists or even as technical staff. None of these roles are “tenure-track,” in the sense that they lead to permanent faculty positions. There are also an increasing number of affiliated faculty positions such as adjunct professors or professors of practice, accommodating individuals whose full-time position is outside the university, for example, in industry or government, but who provide instructional or research services to the institution.

The cadre of part-time faculty is increasing rapidly as universities seek to become more flexible within the constraints of tenure and the elimination of mandatory retirement. For example, over 40 percent of college faculty today have part-time appointments, ranging from 30 percent in research universities to over 60 percent in community colleges.⁶ In fact, in some of the newly emerging institutions such as the University of Phoenix, the instructional faculty is comprised totally of practitioners from industry, with part-time teaching assignments. As one UP instructor put it, “We’re not in academia, you know. We’re not professional teachers; we’re professionals who teach.”⁷

As the fraction of temporary or part-time appointments grows in higher education, a number of issues are raised. For example, can the traditional values of the academy such as academic freedom and collegial debate be sustained with when a significant fraction of the faculty is temporary, without protections such as tenure. Can traditions such as shared governance or liberal arts education be maintained? Will the nature of the faculty change as the number of temporary appointments increase?

Retirement

As the faculty ages in the wake of the elimination of mandatory retirement caps in the 1990s, we face the challenge of providing adequate opportunities to young teachers and scholars and renewing the academy. Although it was initially believed that the elimination of mandatory retirement would not have an appreciable effect, recent surveys suggest that a significant fraction of faculty reaching age seventy decide to continue.⁸ This is not surprising, since university cultures provide wonderful, supportive, and effective environments for teaching and scholarship.

There is an interesting financial wrinkle to this issue. Most universities provide faculty and staff with “defined-contribution” retirement plans, in which a certain amount each year is placed into a tax-deferred investment account for each employee. Upon retirement, the accumulation in these accounts is used to purchase an annuity or reinvested in other income-generating instruments. As one becomes older, usually earning a higher salary, the value of yet another year’s university contribution to the retirement plan becomes considerable. In addition, increasing age can have a major actuarial impact on the value of retirement annuities. Both of these factors create very strong incentives to delay retirement as long as possible.

There is an interesting bimodal pattern created by this system. Many of the best faculty members, who have been compensated well throughout their careers, accumulate sufficient retirement funds (sometimes in excess of \$1 to \$2 million) that they are able to retire in their early 60s drawing the same or even greater income from their retirement investments. Since these are generally among the more active faculty, they are able to retire from one institution with full benefits and then work for another, sometimes in a warmer climate, essentially doubling their income. Left behind are many weaker faculty whose modest retirement assets provide strong motivation to defer retirement. They tenaciously cling to their faculty positions as long as possible. As department chairs and deans are learning, each retirement from this “impacted wisdom group” becomes a complex, individual negotiation, based upon the question: “What is it worth to the university for me to retire?”

As a result, we have created a situation in which de facto age discrimination will be a feature of academic life for a generation—age discrimination not against the old but rather against the young as we deprive them of the opportunity for academic careers.

When one couples this with the growing number of part-time faculty hired by universities in their efforts to retain some measure of flexibility, one can almost see a caste system developing in the American professorate: a large group of aging and relatively prosperous senior faculty who have got their rewards and are going to keep them as long as they can, and a growing number of talented, hungry, and frustrated young scholars, desperately seeking the opportunity to enter the academy.

One might appeal to senior faculty that they have an obligation to step aside at some point late in their careers to make room for the next generation, particularly when there are no serious financial sacrifices to doing so. In fact, at a national meeting concerned with the future of research universities, one of my colleagues challenged the audience, most of whom were rather senior, by suggesting that the most significant thing they could do to help their institutions was to retire! Immediately! (There were no takers.)

But there are less draconian approaches. One might consider a new type of retirement plan, in which the university stops making contributions when the projected annuity income of the faculty member exceeds their present salary. One might also make the status of “retired” but still active faculty much more attractive. One could even create a new faculty rank for those faculty willing to remain fully active but supported by their own retirement annuities rather than university funds. In fact, if the faculty member were to work for a sufficient length of time supported by annuities rather than university salary, say ten years, these faculty positions might even be converted into fully endowed chairs that would continue in the faculty member’s name, since the avoided expense would be comparable to the private gift necessary for a chair (typically \$1 to 2 million).

Tradition and Values

Certainly the most controversial, complex, and misunderstood issue related to the faculty in higher education, at least in the minds of the public, is tenure. In theory, tenure is the key mechanism for protecting academic freedom and for defending faculty members against political attack both within and outside the university. In practice, it has become something quite different: job security, protecting both outstanding and incompetent faculty alike, not only from political intrusion but also from a host of other performance issues that could lead to dismissal in many other walks of life. And, of course, it is this presumed guarantee of job security that so infuriates many members of the public, some of whom have felt the sting of corporate downsizing or job competition.

Because tenure represents such a major commitment by a university, it is only awarded to a faculty member following a rigorous process of evaluation. Faculty members must first navigate successfully a difficult six- or seven-year probation period, usually holding the title of assistant professor, during which their performance as both teachers and scholars is assessed. In most cases, universities seek evaluation of the credentials of the candidate by external referees, typically including several of the leading experts in the faculty member's field. Furthermore, other factors enter in to the decision such as the centrality of the candidate's teaching and research expertise to university priorities and the availability of sufficient funds for a tenured appointment. The tenure review process occurs in stages, first at the department level, then at the level of the school, and finally at the university level. At each stage a negative decision will stop the process, so that only if the review proceeds successfully through all levels will tenure be granted. Although there is considerable variability among universities and academic programs, in most of the leading research universities, less than half of new faculty survive the tenure review gauntlet.

Most university faculty members believe that tenure is a valuable and important practice in the core academic disciplines of the university, where independent teaching and scholarship require some protection from criticism and controversy. This privilege should also enable tenured faculty members to accept greater responsibility for the interests of the university rather than focusing solely on personal objectives. But even within the academy, many are beginning to question the appropriateness of current tenure practices. The abolition of mandatory retirement policies is leading to an aging faculty cohort, insulated from rigorous performance accountability by tenure, and this is depriving young scholars of faculty opportunities.

Some question the value of tenure in professional fields where there is a need to use more "practitioners" as faculty, drawing professionals into the university for a brief period as teachers before they return to their professional careers. This close relationship between teaching and practice, between the university and the profession, is apparent in fields such as medicine and engineering as well as the visual and performing arts. After all, students would prefer to learn from experienced surgeons, successful artists, or accomplished performers, from those who do rather than those who simply study. For these fields, in which faculty are drawn from society for a brief time with the intent that they return, tenure does not appear to be as relevant.

Increasingly, the academy itself is acknowledging that both the concept and practice of tenure—particularly when interpreted as guaranteed lifetime employment—needs to be reevaluated. One approach under consideration—and occasionally even mandated by some state legislatures—is post-tenure review. Faculty members would continue to be reviewed at regular intervals even after receiving tenure. While this makes it possible, in theory at least, to revoke tenure for inadequate performance, these reviews usually take a more constructive approach by identifying problems early and then working with the faculty member to see that they are corrected. Another approach is to reinterpret tenure as only applying to a portion of an academic appointment. For example, in many fields such as medicine, faculty members draw only a small fraction (20 percent or less) of their salaries from university funds, with the majority of support coming from clinical fees or research grants. The awarding of tenure would obligate the university to support only that component of a faculty appointment supported by academic funds.

While there are many who remain firm in their support of the fundamental concept of tenure, basing their arguments on academic freedom, the tenure system will become increasingly diverse with respect to how tenure is provided and interpreted not only among institutions but also within institutions and among various academic programs. It is important for the academy to explore new employment arrangements that respond more realistically to the differing needs of individual faculty members while address societal concerns.

Disciplinary Cloning

Each appointment to the faculty and each promotion within its ranks should be seen as both a significant decision and an important opportunity. In theory, at least, these decisions must be made with the quality of the university always foremost in mind. Policies, procedures, and practices characterizing the appointment, role, reward, and responsibilities of the faculty should be consistent with the overall goals of the institution and the changing environment in which it finds itself. In practice these decisions tend to be made at the level of individual disciplinary departments with relatively little consideration given to broader institutional concerns or long-range implications. In fact, left to their own priorities, most departments will attempt to replace departing or retiring faculty members with identical clones.

Institutional Loyalty

As we have noted earlier, many faculty members regard their host institution as simply a convenient way station as they work their way up the academic ladder, moving from university to another as opportunities for reward and career advancement arise. The fragmentation of the faculty into academic disciplines and professional schools, coupled with the strong market pressures experienced by faculty in many areas, has created an academic culture in which faculty loyalties are generally first to their scholarly discipline, then to their academic unit, and only last to their institution. As one junior faculty member put it in a National Science Foundation workshop on the academy, “The modern university has become simply a holding company of faculty entrepreneurs!”

Brave New World

There is perhaps no greater challenge to the contemporary university than to build and sustain a faculty of strong scholars who are teachers of distinction, who serve the institution in an effective and collegial manner, and who adhere to the highest ethical standards in all of their activities. But this must be done at a time of extraordinary change in the postsecondary enterprise, particularly in North America.

During the past century, there has been a noticeable concentration of control over disciplines, faculty, students, and credentials by the university. Universities serve as the gatekeepers not only for the definition of the academic disciplines and membership in the academy, but as well controlling entry to the professions that so dominate contemporary society. While there is competition among institutions for students, faculty, and resources—at least in the United States—the extent to which institutions control the awarding of degrees has led to a tightly controlled competitive market. Furthermore, most colleges and universities serve primarily local or regional areas, where they have particularly strong market positions. As with most monopoly organizations, today’s university is provider-centered, essentially functioning to serve the needs and desires of the faculty rather than the students they teach or the broader society that supports them. The faculty has long been accustomed to dictating what it wishes to teach, how it will teach it, and where and when the learning will occur. Students must travel to the campus to learn. They must work their way through the bureaucracy of university admissions,

counseling, scheduling, and residential living. And they must pay for the privilege, with little of the power of traditional consumers. If they navigate through the maze of requirements, they are finally awarded a certificate to recognize their experience—a college degree. This process is sustained by accrediting associations, professional societies, and state and federal governments.

This carefully regulated and controlled enterprise could be eroded by several factors. First, the great demand for advanced education and training cannot be met by such a carefully rationed and controlled enterprise. Second, the expanding marketplace will attract new competitors, exploiting new learning paradigms, and increasingly threatening traditional providers. And perhaps most important of all, newly emerging information technology will not only eliminate the constraints of space and time, but it will also transform students into learners and consumers. Open learning environments will provide learners with choice in the marketplace—access to learning opportunities, knowledge-rich networks and digital libraries, collections of scholars and expert consultants, and other mechanisms for the delivery of learning.

The evolution from faculty-centered and -controlled teaching and credentialing institutions to distributed, open learning environments is already happening. The new learning services are increasingly available among many providers, learning agents, and intermediary organizations. Such an open, network-based learning enterprise certainly seems more capable of responding to the staggering demand for advanced education, learning, and knowledge. It also seems certain not only to provide learners with far more choices but also to create far more competition for the provision of knowledge and learning services.

As a result, higher education is likely to evolve from a loosely federated system of colleges and universities serving traditional students from local communities to, in effect, a *global knowledge and learning industry*. With the emergence of new competitive forces and the weakening influence of traditional regulations, education is evolving like other “deregulated” industries, for example, health care, or communications, or energy. Yet, in contrast to these other industries that have been restructured as government regulation has disappeared, the global knowledge industry will be unleashed by emerging information technology as it releases education from the constraints of space, time, and the credentialing monopoly. And, as our society becomes ever more dependent upon new knowledge and educated people, upon knowledge workers, this

global knowledge business will represent one of the most active growth industries of our times.⁹

Many in the academy undoubtedly view with derision or alarm the depiction of the higher education enterprise as an “industry” or “business.” After all, higher education is a social institution with broader civic purpose and not traditionally driven by concerns about workforce training and economic development. Furthermore, the perspective of higher education as an industry raises concerns that short-term economic and political demands will dominate broader societal responsibilities and investment. Yet, in an age of knowledge, the ability of the university to respond to social, economic, and technological change will likely require a new paradigm for how we think about postsecondary education. No one, no government, is in control of the emerging knowledge and learning industry; instead it responds to forces in the marketplace. Universities will have to learn to cope with the competitive pressures of this marketplace while preserving the most important of their traditional values and character.

Today we are bombarded with news concerning the impact of information technology on the market place, from “e-commerce” to “edutainment” to “virtual universities” and “I-campus”. The higher education marketplace has seen the entrance of hundreds of new competitors that depend heavily upon information technology. Examples include the University of Phoenix, the Caliber Learning Network, Sylvan Learning Systems, the Open University, the Western Governors University, and a growing array of “dot-coms” such as Unext.com and Versity.com. It is important to recognize that while many of these new competitors are quite different than traditional academic institutions, they are also quite sophisticated both in their pedagogy, their instructional materials, and their production and marketing of educational services. They approach the market in a highly sophisticated manner, first moving into areas characterized by limited competition, unmet needs, and relatively low production costs, but then moving rapidly up the value chain to more sophisticated educational programs. These IT-based education providers are already becoming formidable competitors to traditional postsecondary institutions.

Today’s comprehensive universities, at least as full-service organizations, are at considerable risk. These institutions have become highly vertically integrated over the past several decades. Yet today we are already beginning to see a growing number of differentiated competitors for many of these activities. Universities are under increasing pressure to spin off or sell off or close down parts of their traditional operations in the

face of this new competition. They may well find it necessary to unbundle their many functions, ranging from admissions and counseling to instruction and certification.

While we are very good at producing intellectual content for education, there may be others who are far better at packaging and delivering that content. While in the past universities have had a monopoly on certifying learning, there may be others, whether they are accreditation agencies or other kinds of providers, more capable of assessing and certifying that learning has occurred. Many of our other activities, for example, financial management and facilities management, are activities that might be outsourced and better handled by specialists.

Some time ago, a leading information services company visited with my institution to share with us their perspective on the higher education market. They believe the size of the higher education enterprise in the United States during the next decade could be as large as \$300 billion per year (\$635 billion if K-12 is included), with 30 million students, roughly half comprised of today's traditional students and the rest as adult learners in the workplace. (Incidentally, they also put the size of the world market at \$3 trillion.) Their operational model of the brave, new world of market-driven higher education suggests that this emerging domestic market for educational services could be served by a radically restructured enterprise consisting of fifty thousand faculty "content providers," two hundred thousand faculty learning "facilitators," and one thousand faculty "celebrities" who would be the stars in commodity learning-ware products. The learner would be linked to these faculty resources by an array of for-profit services companies, handling the production and packaging of learning ware, the distribution and delivery of these services to learners, and the assessment and certification of learning outcomes. Quite a contrast with the current enterprise!

An even bolder arrangement of the elements of the future higher education enterprise was suggested by Brown and Duguid.¹⁰ In their model, students would not be constrained to a particular college or university, but rather would become active learners with many options. They would first select a suitable "degree-granting body," which would determine degree requirements, develop appropriate assessment measures, and provide the appropriate credentials when evidence of learning has been achieved. Working with the degree-granting body, students would have the opportunity to design their education, drawing upon the services of various faculty and learning environments.

In this enterprise, faculty would behave as independent contractors, first becoming associated with various degree-granting bodies and perhaps campus

environments. Although some learning environments would very much resemble today's college campuses, others would be virtual, distributed over powerful knowledge networks. This model would allow the student/learner's educational program to be assembled from a variety of learning providers and experiments, which might change as an individual's educational needs change throughout his or her life.

Higher education is an industry ripe for the unbundling of activities. Universities, like other institutions in our society, will have to come to terms with what their true strengths are and how those strengths support their strategies—and then be willing to outsource needed capabilities in areas where they do not have a unique advantage.

From a broader perspective, we can see the rapid evolution of a global knowledge and learning industry as a continuation of an ever-expanding role and presence of the university during the past century. From the commitment to universal access to higher education after World War II to the concern about cost and efficiency in the 1980s to the role of the university in a knowledge-driven society, there have been both a growth in the number and complexity of the missions of the university, and the entry into postsecondary education of new players and competitors. Today we think of the postsecondary education industry as consisting of a core of educational institutions, research, doctoral, and comprehensive institutions; four-year colleges; two-year colleges; proprietary institutions, and professional and specialized institutions. This core is supported, sustained, and augmented by an array of external players, including state and federal government, business and industry, and foundations. The traditional postsecondary institutions will be joined at the core of the emerging knowledge and learning industry by new players: telecommunications companies, entertainment companies, information technology companies, information service providers, and corporate and governmental education providers.¹¹

The market forces driven by increasing demand for higher education and unleashed by technology are very powerful. Yet, if allowed to dominate and reshape the higher education enterprise, we could well find ourselves facing a brave, new world in which some of the most important values and traditions of the university fall by the wayside. As we assess these market-driven emerging learning structures, we must bear in mind the importance of preserving the ability of the university to serve a broader public purpose.

For most of our history, the growth of higher education in the United States has been sustained by tax dollars, either directly through state and federal appropriation, or

indirectly through favorable tax policy. As a result higher education has been strongly shaped by public policies and public agendas, from Jefferson's writings to the land-grant acts, from the GI Bill to Pell Grants, from the government-university research partnership to the Equal Opportunity Act. Public investment has both determined and protected the public purpose of higher education.

Today, however, there is an increasing sense that the growth of higher education in the 21st Century will be fueled by private dollars. Public policy will increasingly be replaced by market pressures. Hence we are faced with the key question: Will a privately funded, market-driven, "global knowledge and learning industry" be able to preserve the traditions, values, and broader missions of the university?

Concluding Remarks

We have entered a period of significant change in higher education as our universities attempt to respond to the challenges, opportunities, and responsibilities before them. This time of great change, of shifting paradigms, provides the context in which we must consider building the future faculties of our institutions.

Clearly higher education will flourish in the decades ahead. In a knowledge-intensive society, the need for advanced education will become ever more pressing, both for individuals and society more broadly. Yet it is also likely that the university as we know it today—rather, the current constellation of diverse institutions comprising the higher education enterprise—will change in profound ways to serve a changing world. The real question is not whether higher education will be transformed, but rather *how* . . . and by *whom*. If the university is capable of transforming itself to respond to the needs of a society of learning, then what is currently perceived as the challenge of change may, in fact, become the opportunity for a renaissance, an age of enlightenment, in higher education in the years ahead.

For a thousand years the university has benefited our civilization as a learning community where both the young and the experienced could acquire not only knowledge and skills, but the values and discipline of the educated mind. It has defended and propagated our cultural and intellectual heritage, while challenging our norms and beliefs. It has produced the leaders of our governments, commerce, and professions. It has both created and applied new knowledge to serve our society. And it has done so while preserving those values and principles so essential to academic learning: the

freedom of inquiry, an openness to new ideas, a commitment to rigorous study, and a love of learning.¹²

There seems little doubt that these roles will continue to be needed by our civilization. There is little doubt as well that the university, in some form, will be needed to provide them. The university of the twenty-first century may be as different from today's institutions as the research university is from the colonial college. But its form and its continued evolution will be a consequence of transformations necessary to provide its ancient values and contributions to a changing world.

¹ Shirley Tilghman, chair, *Trends in the Early Careers of Life Scientists*, National Research Council (Washington, D.C.: National Academy Press, 1998).

² Tilghman, *Trends in Early Careers*.

³ Committee on Postdoctoral Education, *Report and Recommendations* (Washington, D.C.: American Association of Universities, 1997).

⁴ F. King Alexander, "Student Tuition and the Higher Education Marketplace: Policy Implications for Public Universities", J. Staff, Program, and Organization Development (Winter, 1999)

⁵ F. King Alexander, "Student Tuition and the Higher Education Marketplace: Policy Implications for Public Universities", J. Staff, Program, and Organization Development (Winter, 1999)

⁶ *Parttime Faculty, the New Majority*.

⁷ Courtney Leatherman, "Providing a Different Education: The University of Phoenix," *Chronicle of Higher Education*, October 16, 1998.

⁸ *Parttime Faculty, the New Majority*.

⁹ Marvin W. Peterson, and David D. Dill, "Understanding the Competitive Environment of the Postsecondary Knowledge Industry," in *Planning and Management for A Changing Environment*, ed. Marvin W. Peterson, David D. Dill, Lisa Mets, and associates (San Francisco: Jossey-Bass Publishers, 1997), 3-29.

¹⁰ John Seely Brown and Paul Duguid, "Universities in the Digital Age," *Change* (July, 1996), 11-19.

¹¹ Marvin W. Peterson and David Dill, "Understanding the Competitive Environment of the Postsecondary Knowledge Industry."

¹² Werner Z. Hirsch and Luc E. Weber, "The Glion Declaration: The University at the Millennium", *The Presidency*, Fall, 1998 (American Council on Education, Washington) p. 27