

Preparing Future Faculty  
For  
Future Universities

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My invitation to address this AAC&U workshop concerning the Preparing Future Faculty programs was accompanied by a request that I discuss an array of issues related to a possible mismatch between the current approach to doctoral preparation and the changing university expectations for new faculty. Most of these concerns are well known to you. The current highly specialized form of research-dominated 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%). 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.

In his final letter to the membership of the American Council of Education, its past president Robert Atwell suggested that doctoral education, rather than the crown jewel of American higher education, may be at the root of many of our problems.<sup>1</sup> He noted that the mismatch between doctoral education and the needs of the higher education marketplace is great. Too many faculty members in our research universities are out of touch with the mainstream of higher education—not to mention societal changes and fiscal realities. They go on trying to clone themselves in the persons of their graduate students to assist in their research.

Many of you have no doubt seen the recent Pew Foundation study that suggests that most graduate students believe that the training they receive is not what they sought nor does it prepare them for the careers they will eventually pursue. Yet, ironically, nearly half of those surveyed were satisfied both with their decision to attend graduate school as well as with their dissertation topic and advisor. Hence, apparently they find graduate study interesting—just not particularly relevant to their career objectives.

During the past decade we have seen a number of important efforts to better prepare graduate students for the reality of academic careers. Both the American Association of Colleges and Universities and the Council of Graduate Schools are to be commended for their Preparing Future Faculty programs aimed at providing doctoral students with an opportunity to experience faculty roles in a variety of academic settings. There is a growing effort to approach pedagogy as scholarship and to develop graduate programs better aligned with faculty roles in academic institutions that stress teaching over research.

My own perspective on these issues has been shaped by several recent experiences. As a member of the National Science Board and the National Academy of Sciences Committee on Science, Engineering, and Public Policy, I have been involved in a series of studies concerning issues such as graduate education, postdoctoral studies, and the transition to permanent academic positions.<sup>2</sup> More recently, I have chaired a commission exploring how the University of Michigan might build strategic relationships with leading liberal arts colleges (in particular, Oberlin College and Kalamazoo College) linking our faculty, students, and academic programs in mutually beneficial ways. A program analogous to your Preparing Future Faculty efforts is an important component of these alliances. Finally, this past term, I joined with Edie Goldenberg, the former dean of our College of Literature, Science, and Arts, to develop a graduate course for Ph.D. candidates interested in academic careers. This course, which we tentatively titled “Everything you should know before becoming a college professor...but which no one is likely to tell you until it is too late!” was so successful that we are now planning to develop a summer institute capable of handling far larger numbers of interested students.

My remarks today are drawn from these experiences. Although I will touch upon several of the issues familiar to you including the mismatch between the way we prepare doctoral students and the nature of the contemporary academic career, I wish to add yet another theme. It is my belief that higher education has entered a period of very rapid change. While current efforts such as the Preparing Future Faculty program are valuable, we must take care not to prepare graduate students for the world of higher education as we understand it today (or, in some cases, remember it nostalgically from the past). The real challenge is to prepare future faculty for the *future* colleges and universities that will characterize their careers.

## The Current Paradigm of Graduate Education

There is general agreement that graduate education in America’s research universities represents the world’s leading effort for producing the next generation of researchers. For decades, the conventional wisdom has been that research and teaching were mutually reinforcing and be conducted together, at the same institutions by the same people.<sup>3</sup> For example, in 1996, the National Science Board recommended in a major policy statement that “The integration of research and education is in the

national interest and should be a national objective".<sup>4</sup> By conducting graduate education in the same institutions where a large portion of the nation's basic research is done, our research universities have created a research and training system that is one of the nation's great strengths—and the envy of the rest of the world.

Our current paradigm of graduate education is based on an important, yet fragile, relationship between the graduate student and the faculty that evolves from mentorship into collegiality. 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. As a result, graduate education is almost entirely one-dimensional, focused on producing the next generation of researchers largely as clones of their dissertation advisors. We really don't "teach" graduate students how to teach but rather expect them to learn the trade from their own experience as students. Furthermore, our current approach to preparing students for the academic careers is unique among professional programs in the absence of formal training in ethics and values. Physicians, engineers, and lawyers all must understand and commit themselves to following well-prescribed codes of ethics and behavior to be a member of their profession. Yet university professors, responsible not only for the education of the young but as well for the integrity of one of civilization's most important and enduring social institutions, the university, have no such preparation or ethical code of conduct.

Of course, graduate education does not end with the Ph.D. In many fields, an appointment as a postdoctoral fellow has become not only commonplace but also effectively a requirement for a later academic position. To be sure, there are sometimes strong intellectual reasons for postdoctoral appointments in some fields, such as the need for advanced training and specialization simply cannot be achieved within a conventional Ph.D. program. But probably more significant 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.<sup>5</sup> Again, their postdoctoral experience is focused almost entirely on research, with little attention given to the far broader roles and activities of university faculty members.

### Some Realities of Today's Academy

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. 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. 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. 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. 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.

Although many colleges and universities operate 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. 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.

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 may force them to jump from institution to institution at various stages in their career.

As a result, 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!"

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.

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. In theory 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 tend to replace departing or retiring faculty members with similar colleagues if not identical clones. And in so doing, the academy, just as our doctoral programs, tend to cling tightly to the practices and perspectives of the past rather than recognizing the extraordinary challenge of change that will characterize higher education in the future.

### Preparing for the University of the Future

A century ago, a high school diploma was viewed as a ticket to a well paying job and a meaningful life. Today, a college degree has become a necessity for most careers, and graduate education desirable for an increasing number. A growing population will necessitate some growth in higher education to accommodate the projected increases in the number of traditional college age students. But even more growth and adaptation will be needed to respond to the educational needs of adults as they seek to adapt to the needs of the high performance workplace. Some estimate this adult need for higher education will become far larger than that represented by traditional 18 to 22 year old students.<sup>6</sup> Furthermore, such educational needs will be magnified many times on a global scale, posing both a significant opportunity and major responsibility to American higher education.<sup>7</sup> We can well make the case that it has become the responsibility of democratic societies to provide their citizens with the education and training they need throughout their lives, whenever, wherever, and however they desire it, at high quality and at a cost they can afford. Yet there is growing concern about whether our existing institutions have the capacity to serve these changing and growing social needs—indeed, even whether they will be able to survive in the face of the extraordinary changes occurring in our world.

Both young, digital-media savvy students and adult learners will likely demand a major shift in educational methods, away from passive classroom courses packaged into well-defined degree programs, and toward interactive, collaborative learning experiences, provided when and where the student needs the knowledge and skills. The increased blurring of the various stages of learning throughout one's lifetime—K-12, undergraduate, graduate, professional, job training, career shifting, lifelong enrichment—will require a far greater coordination and perhaps even a merger of various elements of our national educational infrastructure.

The growing and changing nature of higher education needs will trigger strong economic forces. Already, traditional sources of public support for higher education such as state appropriations or federal support for student financial aid have simply not kept pace with the growing demand. This imbalance between demand and available resources is aggravated by the increasing costs of higher education, driven as they are by the knowledge- and people-intensive nature of the enterprise as well as by the difficulty educational institutions have in containing costs and increasing productivity.

In the past, most colleges and universities served local or regional populations. While there was competition among institutions for students, faculty, and resources—at least in the United States—the extent to which institutions controlled the awarding of degrees, that is, credentialling, gave universities an effective monopoly over advanced education. However, today all of these market constraints are being challenged. The growth in the size and complexity of the postsecondary enterprise is creating an expanding array of students and educational providers. Information technology eliminates the barriers of space and time and new competitive forces such as virtual universities and for-profit education providers enter the marketplace to challenge credentialling.

The weakening influence of traditional regulations and the emergence of new competitive forces, driven by changing societal needs, economic realities, and technology, are likely to drive a massive restructuring of the higher education enterprise. From our experience with other restructured sectors of the economy such as health care, transportation, communications, and energy, we could expect to see a significant reorganization of higher education, complete with the mergers, acquisitions, new competitors, and new products and services that have characterized other economic transformations. More generally, we may well be seeing the early stages of the appearance of a global knowledge and learning industry, in which the activities of traditional academic institutions converge with other knowledge-intensive organizations such as telecommunications, entertainment, and information service companies.<sup>8</sup>

This perspective of a market-driven restructuring of higher education as an industry, while perhaps both alien and distasteful to the academy, is nevertheless an important framework for considering the future of the university. While the postsecondary education market may have complex cross-subsidies and numerous public misconceptions, it is nevertheless very real and demanding, with the capacity to reward those who can respond to rapid change and punish those who cannot. 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. 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.

A contrasting and far brighter future is provided by the concept of a *society of learning*, in which universal or ubiquitous educational opportunities are provided to meet the broad and growing learning needs of our society. Today educated people and the knowledge they produce and utilize have become the keys to the economic prosperity and well-being of our society. Furthermore, one's education, knowledge, and skills have become primary determinants of one's personal standard of living, the quality of one's life.<sup>9</sup> Today it has become the responsibility of democratic societies to provide their citizens with the education and training they need, throughout their lives, whenever, wherever, and however they desire it, at high quality and at an affordable cost.

So what would be the nature of a university of the twenty-first century capable of creating and sustaining a society of learning? It would be impractical and foolhardy to suggest one particular model. The great and ever-increasing diversity characterizing higher education in America makes it clear that there will be many forms, many types of institutions serving our society. But there are a number of themes that will almost certainly factor into at least some part of the higher education enterprise.

Just as other social institutions, our universities must become more focused on those we serve. We must transform ourselves from faculty-centered to learner-centered institutions, becoming more responsive to what our students need to learn rather than simply what our faculties wish to teach. Society will also demand that we become far more affordable, providing educational opportunities within the resources of all citizens. Whether this occurs through greater public subsidy or dramatic restructuring of the costs of higher education, it seems increasingly clear that our society—not to mention the world—will no longer tolerate the high-cost, low-productivity paradigm that characterizes much of higher education in America today.

In an age of knowledge, the need for advanced education and skills will require both a personal willingness to continue to learn throughout life and a commitment on the part of our institutions to provide opportunities for lifelong learning. The concept of student and alumnus will merge. Our highly partitioned system of education will blend increasingly into a seamless web, in which primary and secondary education;

undergraduate, graduate, and professional education; on-the-job training and continuing education; and lifelong enrichment become a continuum.

Already we see new forms of pedagogy: asynchronous (anytime, anyplace) learning that utilizes emerging information technology to break the constraints of time and space, making learning opportunities more compatible with lifestyles and career needs; and interactive and collaborative learning appropriate for the digital age, the plug-and-play generation. The great diversity characterizing higher education in America will continue, as it must to serve an increasingly diverse population with diverse needs and goals.

In a society of learning, people would be continually surrounded by, immersed in, and absorbed in learning experiences. Information technology has now provided us with a means to create learning environments throughout one's life. These environments are able not only to transcend the constraints of space and time, but using artificial intelligence and genetic algorithms they, like us, are capable as well of learning and evolving to serve our changing educational needs.

## Conclusion

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. During the next decade, most colleges and universities 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. And they will do so during a period of unprecedented change, as powerful economic, technological, and social forces reshape our society during an age of knowledge.

Is today's form of graduate education preparing the future faculty for this vision of a 21st Century "society of learning"? I think not. The mismatch between the one-dimensional goal of preparing the next generation of researchers and the broader needs of higher education, the tendency of most graduate faculty members to attempt to clone themselves through their graduate students, and the absence in graduate training of significant exposure to the values, traditions, and ethical practices that should

characterize the academic profession, all of these factors tend to moor graduate education rigidly to the past rather than addressing the future needs of our colleges and universities.

At last year's Centennial Meeting of the Association of American Universities, it was suggested that what we need is a Flexner Report<sup>10</sup> for graduate education, akin to the Carnegie Foundation report which transformed medical education a century ago. Clearly we need to rethink the graduate experience, recognizing that the current paradigm based upon an apprentice model to learn the trade of disciplinary scholarship, that is, to clone the current generation of faculty, is ill-suited to prepare the faculty of the future university.

Efforts such as the Preparing Future Faculty program are steps in the right direction. But, these important programs by themselves are not enough. We need a more concerted effort to restructure the education for academic careers as that for a true learned profession, based firmly on an accepted set of values, ethics, and practices currently absent or at least unstated in academic life.

With change comes not only challenge but also opportunity, the opportunity to reshape the process we use for preparing the faculty of the 21st Century university.

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<sup>1</sup> Robert Atwell, *Final Letter to the Membership* (Washington, D.C.: American Council on Education, August 30, 1996).

<sup>2</sup> *Reshaping the Graduate Education of Scientists and Engineering*, Committee on Science, Engineering, and Public Policy, National Academy of Sciences (National Academy Press, Washington, 1995), <http://bob.nap.edu/html/grad/>; *Enhancing the Postdoctoral Experience for Scientists and Engineering*, Committee on Science, Engineering, and Public Policy, National Academy of Sciences (National Academy Press, Washington, 2000) ; <http://www4.nationalacademies.org/pd/postdoc.nsf>

<sup>3</sup> Jaroslav Peliken, *The Idea of the University: A Reexamination* (New Haven: Yale University Press, 1992), 238.

<sup>4</sup> National Science Board, *Science and Engineering Indicators 1996*, preface (National Science Foundation, Washington, 1996)

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- 5 *Enhancing the Postdoctoral Experience for Scientists and Engineering*, Committee on Science, Engineering, and Public Policy, National Academy of Sciences (National Academy Press, Washington, 2000) ; <http://www4.nationalacademies.org/pd/postdoc.nsf>
- 6 Michael G. Dolence and Donald M. Norris, *Transforming Higher Education: A Vision for Learning in the 21<sup>st</sup> Century* (Ann Arbor: Society for College and University Planning, 1997).
- 7 John S. Daniel, *Mega-Universities and Knowledge Media* (Kogan Page, London, 1996)
- 8 Marvin W. Peterson and David D. Dill, "Understanding the Competitive Environment of the Postsecondary Knowledge Industry", in *Planning and Management for a Changing Environment*, edited by Marvin W. Peterson, David D. Dill, and Lisa A. Mets (San Francisco: Jossey-Bass Publishers, 1997) pp. 3-29.
- 9 *Renewing the Covenant: Learning, Discovery and Engagement in a New Age and Different World*, Kellogg Commission on the Future of the State and Land-Grant Universities (2000); James J. Duderstadt, "New Roles for the 21st Century University", *Issues in Science and Technology*, Vol. XVI, No. 2 (2000) pp. 37-44
- 10 Abraham Flexner, *Medical Education in the United States and Canada*, A Report to the Carnegie Foundation for the Advancement of Teaching (Carnegie Foundation, New York, 1910).