

## **Graduate Education in the United States**

Maresi Nerad with

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## INTRODUCTION: *Maresi Nerad*

### **The Cyclical Problems of Graduate Education and Institutional Responses in the 1990s**

When in January, 1900, five university presidents--Charles William Eliot of Harvard, William Rainey Harper of Chicago, Benjamin Ide Wheeler of California, Seth Low of Columbia, and Daniel Coit Gilman of Johns Hopkins--invited nine other United States university presidents to meet in the following month in Chicago for the purpose of forming a permanent organization devoted to "matters of common interest relating to graduate study,"<sup>1</sup> none of them guessed that graduate education would become a major enterprise in the United States. Spearheaded by President Wheeler, this group of fourteen created the American Association of Universities (AAU) and set out to unify and improve the standards for the award of higher degrees at American universities. These men had received their advanced education abroad, most of them in German universities--the world's leading scholarly institutions at the turn of the century, and were eager to transplant the new form of scholarship they encountered there into their own institutions, In so doing, they hoped to stem the flow of able graduate students abroad and attract them to American universities for advanced study instead. Little did they know that some eighty years later graduate education in the United States would become a much sought after commodity and that students from countries all around the world, including Germany, would flock to American universities for their graduate education.<sup>2</sup>

In the fall of 1994, almost 1.2 million graduate students were enrolled in American universities. Of these, 14% were international students<sup>3</sup> In the same year, over 40,000 graduate students received doctoral degrees<sup>4</sup>--an all-time high--and almost 300,000 received master's degrees<sup>5</sup>. From the founding of the John Hopkins University, which is often perceived as marking the establishment of graduate education in the U.S., the number of doctoral degrees practically doubled every decade until the late 1950s, tripled during the post-Sputnik era, reached a historical peak (of 33,755) in 1973, stabilized until 1986, and climbed steadily after 1986 until the present. Not only did more students go on to pursue advanced studies, but also more graduate schools offered a greater variety of programs, and more institutions conferred graduate degrees. In 1908, for example thirty-eight universities offered doctoral degrees, in 1958 there were 175, and in 1994, 37: colleges and universities in the U.S. and Puerto Rico awarded Ph.D.'s

In spite of the seeming success of American graduate education and its distinguished reputation in academic circles both in the United States and abroad, Congress and professional associations today are calling for a reduction in Ph.D. production, claiming that American universities unnecessarily overproduce doctorates. They cite industry leaders who complain that science Ph.D.'s take too long to complete their studies, are too narrowly educated, and are ill prepared for the world outside academe.<sup>6</sup> Forgotten are the stories in the *New York Times* and the *Wall Street Journal* just five years ago warning about a serious shortage of Ph.D.'s in the 1990s as a result of massive faculty retirements and the anticipated increase in the college-bound population. These articles referred to the prominent Bowen and Sosa study of 1989<sup>7</sup> that projected a substantial excess demand for faculty in the arts and sciences, beginning

in 1997 and continuing through 2002, and the presidential address delivered by Richard Atkinson at the AAAS annual meeting in 1990, in which he predicted a serious shortfall of Ph.D.'s in science and engineering for several decades to come.<sup>8</sup> Yet, in 1996, universities are considering curtailing Ph.D. production, and institutions which are not are instead contemplating altering their curriculum in order to adapt their graduate programs to a changing job market.

Why these contradictory messages? During the last decade, just as in the last hundred years, graduate education has had to respond to demands from external forces as well as to the internal demands and dynamics of their own, campuses. The labor market; state higher education governing boards; federal and state research funding and student aid policies; and the public who, during the last decade have demanded that the university be increasingly accountable for the use of public tax-dollars, all have played a more dominant external role in the shaping of institutional policy and program structure. Advancement in knowledge; individual departments, which differ widely from each other in size, wealth, program structure, and outlook regarding the purpose of doctoral education; a student body which, in recent years has become increasingly diverse in gender, ethnicity, citizenship, and age; and the increasing intra-institutional competitive pressure to improve or maintain programs that are regarded highly in academic quality by their peers, are the internal forces that have shaped graduate education

### **Key Issues for Graduate Education during the Last Decade**

There are a variety of issues that have been debated by graduate deans, university administrators, and higher education policy makers during the last decade. The majority of these issues are not new: the same debates have appeared repeatedly throughout the history of U.S. graduate education. In 1964, the problem of long time-to-degree was the theme of a national conference for graduate deans. On this occasion, Dean Hughes from Texas re-read the "Proceedings" of the AAU and discovered that "the deans of AGS have deliberated the problem of how to expedite graduate programs some three dozen times since 1900."<sup>9</sup> In 1960, Berelson commented in his book on graduate education, "plus ca change, plus c'est la meme chose," and listed the following questions as having been discussed over and over: "What does the Ph.D. really mean? What is the place of the master's degree? How can standards be maintained under the pressure of numbers? What can be done to counter the growing specialization of the disciplines? How can the doctoral dissertation be domesticated? How many institutions should offer doctoral work?"<sup>10</sup> These questions are similar to questions posed about the Ph.D. degree in 1996.

Reading through the history of the Association of Graduate Schools (AGS) and the conference topics of the Council of Graduate Schools (CGS), it seems that the over- or under-production of Ph.D.s, financial support for students and research, effectiveness of the graduate programs, and the relevance of the curriculum to societal needs were always contested topics. What is new is the reaction of the institution to these conflicts and problems. During the last decade, universities have had to develop new institutional programs, administrative structures in response to the multiplicity of challenges facing them.

In the following, then, I will briefly describe the issues that, as a result of the external and internal pressures faced by graduate education, have recently been posed in the graduate education debate, and how institutions have responded. A current list of recurring and new issues includes: (1) under- or over-production of Ph.D.s; (2) long time to doctoral degree and low completion rates, particularly in the humanities and social sciences; (3) reduction in federal and state support for research and student financial aid; (4) quality of doctoral programs; (5) concerns about ethics in research; (6) faculty student relationship; (7) the lack of pedagogical training for graduate students teaching assistants; (8) the increasing number and duration of postdoctoral appointments.

### **Ph.D. Production**

Since graduate education, and particularly doctoral education, is the final stage in the process of higher education, students expect to enter directly into the employment sector either inside or outside academe. Only in the sciences, and to some degree in engineering, do doctoral students postpone entrance into the labor force by securing a postdoctoral position, which can be any combination of work and study.”<sup>11</sup> But, in general, because doctoral students are expected to emerge from their graduate education prepared and ready to enter the job market, the labor market is one of the strongest external forces exerting pressure on graduate education. Institutions, although with an inevitable time lag, have devised strategies to either expand or reduce graduate enrollment and degree production.

During the late 1980s, when labor market study results anticipated a severe shortage of doctorates, institutions planned to expand their capacity to offer graduate education. The University of California, for example, intended to establish a tenth campus and increase graduate academic and professional enrollment by 55% until the year 2005. Graduate deans nationwide began to devise comprehensive recruitment strategies and prepared to rearrange their graduate student support money in order to offer four- or five-year support packages that would make graduate study more attractive.

But the end of the Cold War, a world-wide recession, and a federal government which was, and still is, determined to reduce the country’s budget deficit called a halt to all plans for expansion. The federal government changed its spending policy for research and development (R&D) and student aid. Industry shifted its emphasis toward core business, cut back its research, and hired fewer scientists and engineers. Faced with this new situation, the federal government was less interested in funding non-applied research, and industry required individuals who were highly flexible, could rapidly apply their knowledge and research skill to new areas, and could work effectively in a team. Government criticized the university for having neglected societal needs, and industry criticized the university for having trained their science and engineering doctorates too narrowly, and therefore producing researchers who were ineffective in the world outside academe.<sup>12</sup> In the humanities and social sciences, students unable to find academic employment in a tight job market were often considered failures by their own departments, and unfortunately, their plight was often more the source of satirical anecdotes or mocking cartoons than of serious economic and political concern.

Universities responded to these changes by systematically collecting information on their graduates, by revising their curricula, and by considering ways strengthening the master's degree in science and engineering. As requests for information on the career paths of doctorates began to come from federal, state, and institutional agencies, this issue became the primary concern of graduate deans. Institutions began tracking their doctoral graduates and maintaining databases of current information. U.C. Berkeley is currently in the process of launching a study of Ph.D.'s ten years after graduation.

### **Time-to-Degree and Attrition**

In the late 1980s when a shortage of doctorates was anticipated, the length it took students to complete their doctoral degree became a serious concern. In order to guarantee a sufficient and rapidly produced supply of doctorates to meet the anticipated demand, institutions began to examine the factors contributing to time-to-degree. For example, in 1989, the California State Senate commissioned a study on factors affecting time to degree. The study results showed that, indeed, time to the doctoral degree at the University of California had increased by about one year over the last 20 years,<sup>13</sup> and the University of California began research on the reasons for the increase and to implement strategies for reducing time-to-degree.

There were additional reasons that time-to-degree data became important. Given the reduced federal and state budgets, many higher education governing boards were reluctant to increase spending in order to increase graduate production. They looked for areas where they could legitimately hold the budget allocation for higher education steady or decrease it. In their efforts to do so, they began questioning the efficiency of the universities. As a result, they requested measurable output data. Time-to-degree and degree completion rates were obvious measures by which institutional effectiveness and efficiency could be evaluated. Setting up longitudinal data bases in order to analyze time to degree and completion/attrition rates became a focus for many graduate schools during this last decade.

## **Reduction in Federal and State Support for Research and Student Aid**

In the early 1970s, the government began to change its policy for awarding research funding and financial aid. In the mid 1980s, R&D funding further declined, particularly for the behavioral and social sciences. In addition to this reduction on the national level, some states reduced their budget allocations for higher education as a result of the recession that hit certain states, such as Massachusetts and California, particularly hard. Institutions responded to these reductions in outside funding by increasing fees and tuition almost annually since 1991. Graduate schools, both at public and private institutions, organized major fund-raising campaigns to cover the cost of graduate student fellowships.<sup>14</sup>

## **Quality of Doctoral Programs**

The quality of the doctoral program has been a perennial issue. Regular department reviews that include a review of the graduate program are the norm in many universities. Between 1992 and 1995, the national doctoral program assessment was undertaken by a team of faculty under the auspices of the National Research Council.<sup>15</sup>

Although this study is not without its critics, institutions and individual doctoral programs take these results very seriously. Quality programs attract quality students, more research money, and are less likely to lose faculty or funding, and/ or to be abolished all together.

In response, institutions have refined their quality measures. Data collection has become a primary concern. Many graduate schools have introduced exit questionnaires, completed by doctoral graduates at the time of filing the dissertation to assess students' satisfaction with their degree programs.

## **The Faculty/Student Relationship**

In recent years, the graduate student population has become increasingly diverse. More women, minority students, international students, and older re-entry students are enrolled for graduate study. Many of these students want their identities and backgrounds acknowledged, and there is a strong demand for a curricula that speaks to their experience. Often they find the campus and departmental culture unresponsive to their unique needs; many are alienated and isolated. Women often struggle to balance study and childcare, and many find it difficult to establish or maintain social and professional networks in the absence of abundant female role models. Although the number of students from ethnic and racial minority groups has increased, there still have a small presence at the doctoral level, and of those students, even fewer complete the doctoral degree. Many minority students are first-generation college attenders, and the academic culture is foreign to them.

In order to ensure successful completion of the degree, institutions have responded by implementing mentoring programs that help socialize women and minorities into their role as professionals. Minority fellowships and need-based programs have been implemented, and funding patterns have been rearranged and targeted toward critical points during a graduate

career. Institutions have responded to the increase of women and reentry students by setting up an infrastructure that allows them to access childcare on campus.

### **Training Graduate Teaching Assistants**

With the increase in international graduate students teaching lower division courses, undergraduate students began complaining that they couldn't understand of their TA's English. In response, several states legislated that international student TAs meet a level of English proficiency and made money available to establish an English proficiency exam for international graduate student TAs. In addition, several major private funding agencies offered special grants for programs established to address the "training of the future professorate. Institutions responded by implementing proficiency tests and establishing TA training centers or programs designed to provide more systematic pedagogical support and guidance for graduate student instructors.

### **Post-doctoral Appointments**

Post-doctoral appointments have become a major concern during this last decade. Not only do more Ph.D.'s in the sciences and engineering choose to seek more numerous postdoctoral appointments, they also stay in their postdoctoral positions for a longer period of time. Two or three "postdocs" have become the norm rather than the exception, and often an appointment will last five years. Many faculty reason that in a limited job market, postdoctoral positions have become a holding pattern for frustrated job-seekers. The renewed focus on postdocs after a hiatus in the discussion of nearly twenty years, foregrounded many more problematic issues. Universities realized that they had no mechanisms in place to ascertain how many postdocs were working on campus at any one point in time. They became aware that differential pay scales, widely varying working conditions, and unequal or nonexistent benefits packages existed, but did not know the extent of the problem or how to verify it. Some campuses are revising their postdoctoral appointment regulations and procedures, are striving toward a uniform definition, and are setting up data bases that will track their postdocs.

Overall, we can see that during the last decade, graduate deans have invested time, energy, and money in developing innovative programs and comprehensive and reliable data bases for collecting information on their graduate programs and students. Graduate institutions want to regain a measure of institutional autonomy that is a tradition in U.S. graduate education and avoid constantly reacting to external and internal demands. In short, they want to become proactive at anticipating the external and internal forces that impinge upon their institution, and guiding and legitimizing their policies and actions with extensive, readily available data.

### **Organization of this Volume**

This volume is compiled with three groups of readers in mind: first-term graduate deans and vice -presidents; scholars of higher education; and the selection of articles to the interests of these three groups means between various types of literature which, typically, have little

connection with each other. On the one hand, there are national and federal policy oriented reports from NSF, NIH, NRC, such as the COSEPUP report, “Reshaping Graduate education in Science and Engineering,” or papers of the Government-University-Industry Research Roundtable” produced by policy makers/institutional researchers and published by the National Academy. The literature from this camp focuses on national concerns, such as supply and demand and the adequacy of doctoral training for the future. On the other hand, there is a body of literature which addresses specialized aspects of graduate education, such as mentoring, the participation of ethnic minorities and women in graduate education, student financial support, and graduate students’ experience. This literature, written by academic researchers and scholars of higher education journals, often does not take the institutional context or national trends into consideration, and therefore may lack relevance for graduate deans or other policy makers concerned with graduate education. In the same respect, the policy-oriented literature, unfortunately, lacks a sense of institutional specialties and practicability and therefore applies mainly to the realm of desirable goals.

This volume intends to bridge the gap between the policy and scholarly literature by placing the two camps next to each other under a common theme. Articles from two more literature types that concern themselves with issues relevant to graduate education have been included: articles from the popular professional journals, such as *Science* or *Chance* and pieces from the flourishing advice literature. *Science* regularly pays attention to both scholarly and the policy literature. The volume concludes with a section on practical tips for graduate students and graduate deans. By making available the accumulated knowledge from both types of literature, this volume serves as a reference sourcebook for deans, researchers, and graduate students.

This volume has been divided into seven sections, beginning with an often neglected look into the history of graduate education and proceeding to recurrent issues at the national and institutional level, to research on student or student-faculty relations, to present reforms in graduate education in Europe and Asia, and to practical tips for graduate deans and graduate students. The articles included in each section reflect the key topics and most noteworthy developments in graduate education (some of which have been described above) of the last ten years and are intended to answer such questions as: What has been the historical development in U.S. graduate education from the German Humboldtian ideal to the American ideal of graduate education? What are the contested issues at the national, institutional, and student level? How has the student body changed? What is happening at graduate education outside the U.S.? How are we to study graduate education? What theories may guide us?

With answers to these questions, we might stand back from the current debate over graduate education just far enough to gain a fresh perspective. Few issues in the debate are new, but institutions have had to develop new responses. Most recently, universities have had to generate data collection and management systems that will allow them to respond to external and internal pressures. Whether reliable data will close the recurring debate once and for all in regard to the criticisms leveled against graduate education, is questionable. Certainly the collaborative planning efforts of the government and the university can be further refined. However, there will always be students who pursue advanced studies for the love of their

subject, regardless of whether or not there will be a job awaiting them after graduation. These students do not fit into the rational modes of institutional planning!

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## Notes

<sup>1</sup> Audrey N. Slate, *AGS: A History* (The Association of Graduate Schools in the Association of American Universities, 1984) 2.

<sup>2</sup> See Burton Clark, *The Research Foundations of Graduate Education* (Berkeley University of California Press, 1993).

<sup>3</sup> Peter Syverson and Stephen R. Welch, *Graduate Enrollment and Degrees: 1986 to 1994* (Washington D. C.: Council of Graduate Schools, December 1995) 6.

<sup>4</sup> Medical degrees (MD) and law degrees (JD) are excluded.

<sup>5</sup> National Research Council, Summary Report 1994: *Doctorate Recipients from United States Universities*, Washington D.C.: National Academy Press, 1995.3; CGS Graduate Enrollment 1986-94. 18.

<sup>6</sup> "Career 95, the Future of the Ph.D.," *Science* 6 October 1995: 121-145

<sup>7</sup> William G. Bowen and Julie Ann Sosa, *Prospects for Faculty in the Arts and Sciences* (Princeton, NJ: Princeton U P, 1989)

<sup>8</sup> Richard Atkinson, "Supply and Demand for Scientists and Engineers: A National Crisis in the Making," *Science* April 27, 1990: 425-432. 3

<sup>9</sup> Slate, *AGS A History*, 108. See also Patricia Gumpert, "Graduate Education in the U.S.," Higher Education in American Society, ed Philip Altbach, et al., 3rd ed. (Amherst NY: Prometheus Books, 1994)

<sup>10</sup> Berelson, *Graduate Education*, p. 41

<sup>11</sup> The ambiguous status of a "postdoc" is visible in its terminology: postdoctoral study and postdoctoral employment are used synonymously.

<sup>12</sup> see COSEPUP report in this volume.

<sup>13</sup> Maresi Nerad, *Doctoral Education at the University of California and Factors Affecting Time-to-Degree* (Oakland: University of California, Office of the President, 1991).

<sup>14</sup> Berkeley intends to raise 30 million dollars for graduate student fellowships.

<sup>15</sup> Committee for the Study of Research-Doctorate Programs in the U.S. See M. Goldberger, B. Maher, et. al. (eds.), *Research Doctorate Programs in the U.S.: Continuity and Change* (Washington: National Academy Press, 1995) in this volume.