

## The Changing Landscape of Master's Education: Implications for Penn State

### Introduction

I am delighted to be here with you at Penn State to talk about master's education, to share my thoughts on the changing landscape for master's education at research universities, and to explore with you the implications of these changes.

The first thing to note is that master's education is a hugely important part of the graduate enterprise. Eighty-two percent of the freshmen entering U.S. colleges and universities in the fall of 2000 reported that they planned to earn a graduate or professional degree after the bachelor's degree. And a resounding majority of those freshmen named the master's degree as their objective (ACE 2001). In fact, ninety percent of all students who get graduate degrees in the U.S. get master's degrees. This is not new – in fact, it has been true since 1990. What you may find surprising is that about two thirds of these master's degrees are awarded at Research I universities, and this has also been a relatively stable number for several years. If there is a trend, it is for research universities to be increasing their share of the pie. Growth in master's degrees earned at all institutions was up 11 percent in the last five years, and up about 13 percent at Research I universities.

This robust market for the master's degree—a trend that continues to endure beyond the 1990s—was foretold in a wide-ranging study on master's education in the U. S., commissioned by the Council of Graduate Schools and funded by the Pew Charitable Trusts in the early 1990s. The researcher Cliff Conrad and his co-authors allow the title of their book based on these findings to tell the story: *A Silent Success: Master's Education in the United States*.

Their findings were straightforward. They told us that master's degrees were routinely assigned “second-class and consolation prize status, mostly by individuals associated with colleges and universities,” but that students and graduates told a different story (314). Having listened to stakeholders' accounts of their master's experiences, Conrad et al. report that the experiences these students had with master's education were for the most part very positive and largely inconsistent with the more negative literature and with some educators' more unenthusiastic views. In short, they found that master's education was indeed a “silent success,” for degree holders, employers and society in

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general (Conrad, Haworth and Millar 1993, 315).

Against this background, I would like to reflect with you today on the current status of master's education, on what trends are apparent and what implications these trends might hold for research universities like Penn State.

We will approach our exploration of these trends and implications from three perspectives, with the following three questions: (1) Who is getting master's degrees?: demographics (2) What are they studying?: curriculum (3) How are they learning?: pedagogy and mode of delivery.

### Who Gets Master's Degrees?

The most important message in the data on who receives master's degrees is that while master's programs have always been more diverse than doctoral programs, this diversity has increased over the past decade. I will illustrate this point by looking at gender, ethnicity and finally age and employment.

#### Gender

Women have flowed into master's programs over the past five years in significant numbers. The increase in total master's enrollment over the last five years is in fact largely attributable to women, who now earn 57 percent of all master's degrees conferred. Overall, master's enrollment has increased by 11 percent over five years, but among women the increase is 17 percent, while men record a 5 percent growth. At research universities, the growth of women enrolled at the master's level is even more emphatic. With their increased numbers – up by 22 percent over the past five years – women now earn 55 percent of all master's degrees granted by institutions like Penn State.

#### Ethnicity

Ethnic minorities have also participated strongly in master's education. The decade between 1988 and 1998 tells the story.

Table 1	
<u>Ethnic Minorities * As Recipients of Master's Degrees</u>	
<u>Year</u>	<u>Ethnic Minority as Percent of Total (U.S.)</u>
1997-98	18% (N=69,449)
1993-94	15% (N=50,814)
1988-89	12% (N=32,793)
*Black, Hispanic, Asian, American Indian	
Source: National Center for Educational Statistics, 2000	

And the numbers continue to grow. By academic year 1999-2000, minorities showed a nearly 20 percent (19.9) increase over the previous year. For each of the groups except Native Americans, the numbers have more than doubled over the past 10 years. The greatest percentage of increase has been in Hispanic students, up 47 percent, and African American students, whose numbers increased by 17 percent last year, are next. Here again, research universities are major participants. Research I institutions awarded 26 percent of all masters awarded to minorities in the 1999-2001 academic year (Brotherton 2001).

The implications of these data on gender and ethnicity for those research universities that have staked out an aggressive commitment to diversity in their student body warrant further analysis. Master's programs are an important medium for fostering campus-wide diversity. But to advance diversity, we need to not only champion our master's programs: we also need to understand what it is about master's education that makes it attractive to historically underrepresented groups. This is a point we might want to pursue in the discussion component of our meeting later this morning.

The final point on the demographics of master's education relates to the age and employment patterns of the students. Though master's students are, on average, the same age as Ph.D. students, they more likely to be employed both full-time and part-time. This, of course, confirms expectations.

Table 2		
<u>Age and Work Characteristics of Master's Students in Comparison with Doctoral*</u>		
	Master's Students	Ph.D Students
Age		
Average Age	32	32
Percent over 30	55%	53%
Percent over 40	21%	17%
Employment Status		
Percent employed	84%	76%
Percent worked 35+ hours a week	57%	32%
(if worked)		
Average Annual Income	\$33,783	\$33,080
Full time/full year attendance	26%	51%
*NCES, NPSAS, 1996		

Perhaps the most important numbers charted in Table 2 are the ones addressing employment status. The average annual income for master's and doctoral student is about the same. But master's students are more likely to work full-time than doctoral students (57 percent compared to 32 percent), and we know from our own experience they are also much more likely to be employed outside the university. With more than 84 percent of master's students employed while pursuing the degree and only 26 percent enrolled as full-time students, there are implications for both what the students are studying, i.e., curriculum, and for how they are studying, i.e., mode of delivery. Let's turn next to the question of curriculum.

### What Are Students Studying?

Probably the first thing to note is that there is a rich panoply of degree titles: 829, according to our count of degrees listed in *Peterson's Guide to Graduate and Professional Programs*.

The traditional distinction among master's degrees has been between professional masters, and arts and science master's degrees. The following table illustrates that distinction:

Table 3

**Professional and arts and sciences master's degrees conferred  
by degree-granting institutions,  
by discipline divisions (1997-1998)**

	1997-1998	Total:
Professional		430,164
Agriculture and natural resources	4,475	1.0%
Architecture and related programs	4,347	1.0%
Business	102,171	23.8%
Communications	6,175	1.4%
Computer and information sciences	11,264	2.6%
Education	114,691	26.7%
Engineering	27,088	6.3%
Health professions and related sciences	39,260	9.1%
Home economics	2,914	0.7%
Law and legal studies	3,228	0.8%
Library science	4,871	1.1%
Parks, recreation, leisure & fitness studies	2,024	0.5%
Protective services	2,000	0.5%
Public administration	25,144	5.8%
Theology studies	4,692	1.1%
Visual and performing arts	11,145	2.6%
Total	365,489	85%
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Liberal arts and sciences		
Area, ethnic and cultural studies	1,617	0.4%
Biological sciences/ life sciences	6,261	1.5%
Foreign languages and literatures	2,927	0.7%
English language & literature/letters	7,795	1.8%
Liberal arts and sciences	2,801	0.7%
Mathematics	3,643	0.8%
Multi/interdisciplinary studies	2,677	0.6%
Philosophy and religion	1,307	0.3%
Physical sciences	5,361	1.2%
Psychology	13,747	3.2%
Social sciences and history	14,938	3.5%
Total	63,074	15%

Source: NCES 2000, table 255

The assumptions in this standard taxonomy are clear. There are two distinct educational universes in master's education: one to prepare for professional life, and one, the arts and science degree, taken as part of the journey to the Ph.D. As table 3 suggests, the vast majority of degrees are awarded in the professional fields.

The classic professional masters tends to be aligned with a well-defined profession, e.g., business, public administration, or education; is often aligned with a school or college in a university, and frequently is "regulated" by some external accrediting body. The classic arts and science masters is aligned and often articulated with a Ph.D. program; its home unit is typically a department, and quality is routinely set by internal faculty standards. About 73 percent of all doctorate recipients have earned a masters on the way to a Ph.D., though patterns vary by field from about a third in chemistry to over 80 percent in engineering (National Science Foundation: Doctoral Recipients from the U.S. Universities. Summary Report, 1999).

Within both of these categories, and especially in the sciences and engineering, there has been a proliferation through the 1990s of concurrent bachelor/master's degrees. Typically open to only the most academically talented undergraduates, these five-year programs have enabled high-achieving seniors to pursue graduate study while they are completing their undergraduate degrees. Such programs generally are not especially innovative in terms of curriculum; rather they represent a vehicle for accelerating study for a special class of learners.

But over the past few years some important innovations have been introduced into the masters curriculum. As early as the mid-1990s, there was a call for even more creative thinking about this degree that had already proven itself a "silent success." The Committee on Science, Engineering and Public Policy (COSEPUP) of the National Academy of Science suggested in 1995 that graduate schools of arts and science might offer a "different kind of graduate degree than the Ph.D., a terminal degree that would be less oriented to research and require less time to complete than the Ph.D." And other observers of graduate preparation in the sciences—Sheila Tobias, Daryl Chuben and Ken Aylesworth—asked, "What kind of professional master's degrees might we invent for science?" in their report *Rethinking Science as a Career*.

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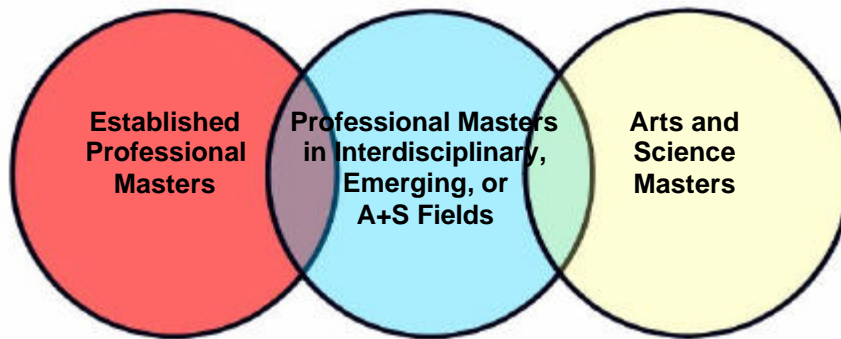


Fig. 1. Master's Education at the Intersection

The new professional masters in interdisciplinary and emerging fields have a complex genealogy. Often rooted in traditional arts and science disciplines, these new master's degrees tend to be interdisciplinary or multidisciplinary, to reflect emerging fields for which there is not yet a doctoral counterpart. They typically emerge in response to a perceived demand on the part of stakeholders outside of the academy, and often involve direct pursuit of "work skills" in preparation for careers in industry. Examples of the range of such programs can be found below.

Pennsylvania State University	Master of Science in Biotechnology
Boston University	Bioinformatics
University of Pittsburgh	"
NC State University	"
Georgia Institute of Technology	Quantitative Computational Finance
University of Southern California	Physics with Business Applications
Michigan State University	Industrial Mathematics
	Industrial Microbiology
University of Southern California	Computational Linguistics
Georgia Institute of Technology	Human/Computer Interactions

These are examples of programs, most of them funded by the Sloan Foundation under its initiative to promote professional science master's degrees. The idea behind these programs is to foster the development of a new kind of master's degree, comparable to the MBA or law degree, but with a technical component. They are designed to prepare students for careers outside of academia, in a variety of jobs such as: managing industrial research projects, dealing with intellectual property, or working as a liaison between a company's R & D division and its business operation. Interestingly, for land-grant universities like Penn State, these programs share much in common with master's degrees that have long been in place in the sciences and engineering. At NC State, for example, a master's degree in engineering that is interdisciplinary in nature has been offered for twenty years or more. In this degree program, targeted toward those already in the workforce, students take courses that cut across all engineering disciplines, as well as extensive coursework in management and statistics. Those courses—initially delivered via videotape, by the way—are now delivered via the Internet.

The new professional master's degrees, however, are not restricted to the sciences. The question, "What kind of professional master's degree do we want for the humanities and social sciences?" is now being asked by research universities as well. Over the last few years, and generally sans the private funding provided to the sciences, "boutique" master's degrees— as they have been called — have come into being. New York University offers masters in European studies, literary biography and biomedical journalism.\* Columbia University has had at least a dozen master's degrees on the drafting table in recent years, including degrees in environmental science journalism and critical studies in modern art. At NC State and Carnegie Mellon, interdisciplinary masters in technical communication are offered in response to strong market demand. And at the University of Chicago, a one-year master of arts program in the humanities aims to foster practical intellectuals, and to serve as preparation for professional practice in think tanks, government or nonprofits — or as a springboard into a Ph.D. program (Schneider 1999). The Council of Graduate Schools will be making a special effort to understand the nature of this trend in master's education through a project that will begin soon with support from the Ford Foundation. Under the auspices of this important project, we will map the landscape of new professional masters in the social sciences and suggest directions for the future.

What are the implications for Penn State of the merger of these two rather distinct universes in master's education? Well, from a quick read of today's program, it looks as though Penn State is already engaged. And that is not surprising. Your land-grant heritage has doubtless fostered a faculty culture that

is open to the merger of fundamental and applied scholarship. And it is this merger that is at the curricular heart of all of these new professional master's initiatives.

### How Are Students Learning?

The final topic in my trio of questions regarding developments in master's education relates to how students are acquiring master's degrees. Here let me acknowledge that I am bringing coals to Newcastle by talking about electronically mediated instruction at Penn State. So rather than tell you things you already know – or worse, tell you things that none of us really know yet (like how many master's programs are being delivered entirely by electronic means) – I would like to simply share an observation. Digital media are redefining many aspects of higher education, but for research universities, nowhere more so than in their master's programs. The most useful observation on this point is one made by Michael Schrage of the MIT media lab. Schrage notes that the digital technologies restructuring academe are fundamentally about creation and management of new relationships. “When graduate students talk about the quality of their experiences at a university, they tend to describe the quality of the relationships they've had.” (They loved or hated their advisor, they liked going to conferences, etc.) So the important question to consider with respect to the impact of technology on the future of master's education is this: How effective are we in creating high-quality relationships for our students in master's programs and how does technology mediate the experience? (Schrage 2000, 76-77). In their study of master's students, Cliff Conrad et al. tell us that the relationships students experience and develop are among the most valuable assets they acquire on the journey to a degree (303-312). Our research universities need to twin cutting-edge technology with cutting-edge relationship building as we use electronic technology to expand and enhance our reach in master's programming.

### Conclusion

Let me bring these remarks to a close by making an observation and perhaps a few recommendations. The general observation is that master's education, always a source of innovation and creativity, is now recognized more broadly for this contribution. In the words of a *Chronicle* writer, “Academe's ugly duckling has become its newest little darling” (Schneider 1999). Given that master's degrees are being “rediscovered,” I'd like to end with some practical guidelines for

research universities as they continue to expand their participation in this important aspect of graduate education.

First, allow the value of master's degrees to speak for itself: Resist the urge to define master's degrees as somehow "better than" or replacements for the Ph.D. Avoid zero-sum games. Second, find positive sum opportunities by looking to master's programs as sources of innovation across the board. In our land-grant universities, many of our long-standing master's providers are gold mines for the kinds of innovations that are now needed. Third, use these newly developed programs to build interdisciplinary communities that ultimately will enrich the Ph.D. world as well. Finally, see the opportunities for enhancing the diversity of your campus that the master's enrollment entails. As clearly evidenced by the data, master's programs not only increasingly attract women and students of varied ethnic backgrounds, but they also enrich academia by drawing those with meaningful "life experience" – older students, students who not only work full-time, but who have established careers.

A wide range of rationales have been provided for the master's degree. One I found particularly intriguing comes from a faculty member, who argued that master's education may reduce recidivism (based on the university's experience with students who completed an MA while serving time). According to this faculty member, the recidivism rate for that population is 10 percent as opposed to 50 percent for the inmate population at large (McNamara 1999). This, however, is not my primary message to you today. Rather it is to emphasize the tremendous impact that master's education has on our national strength, viability and vitality. Master's degrees, in all their variety and growing areas of specialization, prepare hundreds of thousands of students to make important leadership contributions not only to their professions – in business, industry, government, education, academia, the arts, etc. – but to the larger society as well. Universities like Penn State play a key role in this process.

Master's graduates emerge from their programs as critical thinkers equipped with enhanced communication and teamwork skills –in the words of Cliff Conrad, Katherine Duren, and Jennifer Haworth, "they [become] more critical questioners of knowledge" (69). One master's graduate quoted in their article, which focuses on students' perspectives of their master's experiences, said that during his program, he began to feel "a real dedication to giving something back [to the surrounding community] . . . ." The master's, he said, taught him "how to become actively involved . . . Before maybe I was just a good neighbor, as opposed to being a community servant," he said (74-75).

The 1993 CGS study found that the master's degree was a silent success. Maybe now, in 2001, we can argue more than that: that it now speaks eloquently, at a critical time in our nation's history, about the reach, the enormous value, and broad influence of graduate education.

## Sources

- American Council on Education/University of California, Los Angeles Higher Education Institute. 2001. "The American Freshman: National Norms for Fall 2000." *The Chronicle of Higher Education, Almanac Issue 2001-2*, Aug. 31: 23
- Brotherton, Phaedra. 2001. "Graduate Degrees Continue Upward Trend." *Black Issues in Higher Education*, 18, no.11: 45.
- Committee on Science, Engineering and Public Policy (COSEPUP) of the National Academy of Science. 1995. *Reshaping the Graduate Education of Scientists and Engineers*. Washington, DC: National Academy Press
- Conrad, Clifton, Jennifer Haworth, and Susan Bolyard Millar. 1993. *A Silent Success: Master's Education in the United States*. Baltimore: Johns Hopkins University Press.
- Conrad, Clifton F., Katherine M. Duren, and Jennifer Grant Haworth. 1998. "Students Perspectives' on Their Masters Degree Experiences: Disturbing the Conventional Wisdom." *New Directions for Higher Education 101* (spring): 65-76.
- Council of Graduate Schools. 2000. *CGS Enrollment Survey 2000*. Washington, DC: Council of Graduate Schools.
- McNamara, Kevin R. 1999. Letter to the Editor. *The Chronicle of Higher Education*, 11 June.
- National Science Foundation. 1999. Doctoral Recipients from the U.S. Universities. *Summary Report*.
- Peterson's Graduate and Professional Programs: An Overview, Book I*. 2001. Princeton: Peterson's/Thomson's Learning.
- Schneider, Alison. 1999. "Master's Degrees, Once Scorned, Attract Students and Generate Revenue." *The Chronicle of Higher Education*, 21 May.
- Schrage, Michael. 2000. Tangled Web(s): The Rise of the Absent-Networked Professor and "The Translucent University," In *Postbaccalaureate Futures: New Markets, Resources*, edited by Kay Kohl and Jules B. LaPidus. Phoenix: American Council on Education and Oryx Press.
- Tobias, Sheila, Daryl Chuben, and Ken Aylesworth. 1995. *Rethinking Science as a Career: Perceptions and Realities in the Physical Sciences*. Tucson: Research Corporation.