Graduate Education in the United States

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Princeton University

University of Minnesota
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ETS/CGS Commission on the Future of Graduate Education in the U.S.
A Dean’s Perspective
The Path Forward:
The Future of Graduate Education in the United States
Who served on the Commission?

Corporate Leaders
• Thomas Connelly, DuPont
• Roger Ferguson, TIAA-CREF
• Stanley Litow, IBM
• Richard Parsons, Bank of America
• Ronald Townsend, Battelle
• John Seely Brown, Xerox

University Leaders
• Gene Block, UCLA
• Ronald Mason, Jackson State University
• John Wiley, University of Wisconsin
• Scott Bass, American University
• Suzanne Ortega (Vice-Chair), University of New Mexico
• Karen DePauw, Virginia Polytechnic Institute & State University
• Jeffery Gibeling, University of California Davis
• Patrick Osmer, The Ohio State University
• William Russel (Chair), Princeton University
• Liora Schmelkin, Hofstra University
• Susan Stites-Doe, College at Brockport, SUNY
• James Wimbush, Indiana University

Ex Officio Members
• Kurt Landgraf, ETS
• Debra Stewart, CGS
Why this Commission?

The **key assumption** is that U.S. competitiveness and future prosperity depend critically on our capacity to produce top-notch doctoral and master’s degree holders prepared to address the challenges and opportunities of the 21st century.
What was the Commission’s purpose?

To provide an empirical basis to support the assertion that graduate education is a strategic national asset that is at risk and to provide policy recommendations about the role of graduate education in ensuring our continued national prosperity.
Report Organization

- **Introduction**
  - Why focus on graduate education?
  - Threats to the U.S. system
  - The path forward

- **Trends**
  - Pathways to graduate school
  - Graduate degree recipients
  - International competition

- **Vulnerabilities**
  - Attrition, completion, careers
  - Expectations, future jobs
  - Debt, financial support

- **Recommendations**
  - Universities
  - Industry
  - Government
What We Learned: Findings
Graduate Education is the Source of a Highly Skilled Workforce

Career opportunities and national needs

– The knowledge-based economy of the 21st century requires the advanced knowledge and skills acquired in graduate school
– Graduate education trains creative thinkers able to produce cutting-edge research and address complex societal problems
– Number of jobs requiring an advanced degree to grow by about 2.5 million by 2018: masters +18% PhD’s +17%

Student aspirations

– 50% increase in enrollment since early 1980s
– # of doctoral degrees growing faster than population
The market is rewarding graduate education

Source: Council of Graduate Schools, *Graduate Education in 2020*
## Demographic Trends

### High School Sophomores Reported Degree Aspirations

<table>
<thead>
<tr>
<th></th>
<th>Less than Bachelor’s</th>
<th>Bachelor’s</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>19%</td>
<td>40%</td>
<td>41%</td>
</tr>
<tr>
<td>Black</td>
<td>30%</td>
<td>40%</td>
<td>30%</td>
</tr>
<tr>
<td>Asian</td>
<td>13%</td>
<td>37%</td>
<td>50%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>30%</td>
<td>40%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Gender Trends

Women comprise 59% of graduate students

Degrees conferred as percent of population (ages 25–35)

Other countries recognize graduate education and human capital development as engines of economic competitiveness. International students have increasing options:

– China and India are investing heavily in graduate programs
– Canada, Australia, and others are welcoming internationals
– International students educated in the US increasingly find viable career options in their home countries

Europe and China now produce more doctorates in the sciences and engineering than the U.S.
# Trends in International Student Stay Rates

## Percentage of International Students Remaining in the US 5 Years After Completing Doctorate

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>88%</td>
<td>92%</td>
</tr>
<tr>
<td>India</td>
<td>79%</td>
<td>85%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>42%</td>
<td>50%</td>
</tr>
<tr>
<td>Korea</td>
<td>11%</td>
<td>42%</td>
</tr>
<tr>
<td>Japan</td>
<td>13%</td>
<td>39%</td>
</tr>
<tr>
<td>All countries</td>
<td>47%</td>
<td>65%</td>
</tr>
</tbody>
</table>

The current state of attrition and completion in U.S. doctoral programs wastes human and financial resources.
Areas of Vulnerability

- Many attractive career paths outside of the academy exist for Ph.D. graduates but are not readily visible.
- Jobs within and outside of the academy increasingly demand skills beyond those imparted in traditional programs.
- Students who borrow graduate with significant debt (e.g. masters $50k, doctorate $77k).
- Federal support emphasizes research, not education, and does not support the cost of education.
Moving from Findings to Action
Recommendations for Universities

• Strengthen programs to identify talented undergraduate students
• Clarify career pathways for graduate students
• Improve completion rates
• Enhance professional development that includes career and “soft” skills
Recommendations for Policymakers: The Federal Role

- Establish COMPETES doctoral traineeships
- Support and expand existing graduate traineeships & fellowships
- Support innovative master programs
- Reduce barriers for international students
Materials available at: www.fgereport.org
Princeton University
small, private research university
5,200 undergraduates and 2,500 graduate students

Goals of the Graduate School

• Attract best and brightest from all demographic groups and around the world
• Support graduate students well both financially and physically
• Maintain rigorous disciplinary degree programs with interdisciplinary options
• Provide opportunities to gain understanding of other societies and cultures
• Augment academic programs with professional development
• Bring a major fraction of the students to timely completion of their degrees
• Graduates who will advance their professions and contribute to society
• Maintain connection with alumni to assess our success and enlist their support
The Graduate School
[fonuded in 1900]

Dean  member of the faculty
       and central administration

Associate Deans and Directors
       academic affairs
       academic affairs and diversity
       finance and admissions
       graduate student life
       graduate alumni relations

Support Staff  18 members
### Academic and Administrative Support

<table>
<thead>
<tr>
<th>Position</th>
<th>Departments/Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean of the College</td>
<td>Center for Teaching and Learning</td>
</tr>
<tr>
<td></td>
<td>Writing Program</td>
</tr>
<tr>
<td>VP for Campus Life</td>
<td>Health Services</td>
</tr>
<tr>
<td></td>
<td>Visa Services</td>
</tr>
<tr>
<td></td>
<td>International Center</td>
</tr>
<tr>
<td></td>
<td>English Language Program</td>
</tr>
<tr>
<td></td>
<td>Career Services</td>
</tr>
<tr>
<td></td>
<td>Campus Center &amp; Shuttle</td>
</tr>
<tr>
<td>VP for Facilities</td>
<td>Housing</td>
</tr>
<tr>
<td></td>
<td>Dining</td>
</tr>
<tr>
<td>VP for Public Affairs</td>
<td>Alumni Council</td>
</tr>
<tr>
<td></td>
<td>Communications</td>
</tr>
<tr>
<td></td>
<td>Government Affairs</td>
</tr>
<tr>
<td>VP for Development</td>
<td>Graduate Annual Giving</td>
</tr>
</tbody>
</table>
Works with faculty, students, and staff to promote excellence in graduate education for over 7,000 students in 103 Ph.D. and 78 master's programs.

**Welcome:**
- Dean’s Welcome
- How Rackham Helps Students
- Graduate Student Living...

**Policies:**
- Academic Policies
- Academic and Professional Integrity
- Dispute Resolution
- Continuous Enrollment

**Dissertations:**
- Advancement to Candidacy
- Dissertation Handbook
- Dissertation Committees
- Oral Defense

**PLAN:**
- Profession, Life, Academics, Networks

**Diversity:**
- Bouchet Honor Society
- Rackham Summer Institute
- Faculty Allies for Diversity
Useful Indicators

• success in admissions
• surveys of graduate students
• completion and time-to-degree
• placement
## Completion and Time to Ph.D. Degree

<table>
<thead>
<tr>
<th>Year of Entry</th>
<th>Number Matriculated</th>
<th>Generals Completed</th>
<th>Median to Generals</th>
<th>PhD Completed</th>
<th>Median to PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-84</td>
<td>1,606</td>
<td>90%</td>
<td>1.7</td>
<td>79%</td>
<td>5.1</td>
</tr>
<tr>
<td>1985-89</td>
<td>1,667</td>
<td>90%</td>
<td>1.7</td>
<td>81%</td>
<td>5.7</td>
</tr>
<tr>
<td>1990-94</td>
<td>1,744</td>
<td>92%</td>
<td>1.6</td>
<td>77%</td>
<td>5.7</td>
</tr>
<tr>
<td>1995-99</td>
<td>1,605</td>
<td>92%</td>
<td>1.7</td>
<td>79%</td>
<td>5.7</td>
</tr>
<tr>
<td>2000-04</td>
<td>1,861</td>
<td>93%</td>
<td>1.9</td>
<td>42%</td>
<td>5.3</td>
</tr>
<tr>
<td>2005-09</td>
<td>2,008</td>
<td>66%</td>
<td>1.9</td>
<td>3%</td>
<td>4.3</td>
</tr>
<tr>
<td>2006-07</td>
<td></td>
<td></td>
<td>1.7</td>
<td>332</td>
<td>5.5</td>
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<tr>
<td>2007-08</td>
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<td>1.7</td>
<td>307</td>
<td>5.6</td>
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<tr>
<td>2008-09</td>
<td></td>
<td></td>
<td>1.7</td>
<td>349</td>
<td>5.6</td>
</tr>
<tr>
<td>2009-10</td>
<td></td>
<td></td>
<td>1.9</td>
<td>302</td>
<td>5.6</td>
</tr>
<tr>
<td>Humanities</td>
<td>68</td>
<td>2.1</td>
<td></td>
<td>50</td>
<td>6.3</td>
</tr>
<tr>
<td>Social Sci.</td>
<td>81</td>
<td>1.7</td>
<td></td>
<td>64</td>
<td>5.9</td>
</tr>
<tr>
<td>Natural Sci.</td>
<td>123</td>
<td>1.7</td>
<td></td>
<td>105</td>
<td>5.0</td>
</tr>
<tr>
<td>Engineering</td>
<td>79</td>
<td>1.7</td>
<td></td>
<td>73</td>
<td>5.5</td>
</tr>
<tr>
<td>Arch. &amp; WWS</td>
<td>7</td>
<td>2.5</td>
<td></td>
<td>10</td>
<td>5.8</td>
</tr>
</tbody>
</table>

outstanding completion and time-to-degree
important factors
dedicated faculty
relatively low grad student/faculty ratio
time-consuming but effective annual re-enrollment process
### Ph.D. Placement

<table>
<thead>
<tr>
<th></th>
<th>Academic Positions</th>
<th>Post Docs</th>
<th>Non-Academic Placement</th>
<th>Not Placed</th>
<th>Unkn</th>
<th>Total Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ivy + AGS CGS Int'l LibArt Other</td>
<td>Dom Int'l</td>
<td>Ind/Bus Gov't Non-Profit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04-05</td>
<td>17 22 26 16 5 17</td>
<td>75 14</td>
<td>60 3 6</td>
<td>8</td>
<td>7</td>
<td>276</td>
</tr>
<tr>
<td>05-06</td>
<td>16 18 10 4 1 10</td>
<td>123 19</td>
<td>51 12 12</td>
<td>8</td>
<td>4</td>
<td>288</td>
</tr>
<tr>
<td>06-07</td>
<td>13 17 22 12 3 14</td>
<td>120 29</td>
<td>72 10 11</td>
<td>7</td>
<td>2</td>
<td>332</td>
</tr>
<tr>
<td>07-08</td>
<td>12 10 14 7 9 12</td>
<td>105 20</td>
<td>77 15 12</td>
<td>12</td>
<td>2</td>
<td>307</td>
</tr>
<tr>
<td>08-09</td>
<td>9/6 20/5 25/0 14 6 19</td>
<td>110 29</td>
<td>65 11 12</td>
<td>14</td>
<td>2</td>
<td>347</td>
</tr>
<tr>
<td>09-10</td>
<td>8 15 13 25 2 19</td>
<td>83 24</td>
<td>65 9 11</td>
<td>27</td>
<td>1</td>
<td>302</td>
</tr>
</tbody>
</table>

Academic placements at Ivy +, AGS, and CGS: tenure-track / not tenure-track

Ivy +: UC Berkeley, Brown, Chicago, Columbia, Cornell, Harvard, MIT, Penn, Princeton, Stanford and Yale

AGS: Association of Graduate Schools; members of the Association of American Universities

CGS: Council of Graduate Schools

LA: Liberal arts colleges highly regarded for excellence in undergraduate education

**Note:**
- Consistently high percentage placed until now 95%→91%
- Increasing competition for top academic positions 12%→8%
- Significant fraction into postdoctoral appointments 30%→40%
- Consistent portion of non-academic positions ~25%
The Graduate School maintains **centralized control** over graduate education, but must remain **responsive** to the priorities of the University and the needs and aspirations of the departments and programs, and **depends** on support from all administrative units of the University.

Therefore, maintaining close contact with the entire campus is essential to the health of the Graduate School.