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# Steps Taken on *The Path Forward*

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A Paper from the Council of Graduate Schools

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# INTRODUCTION

The Commission on the Future of Graduate Education in the United States was a joint initiative of the Council of Graduate Schools (CGS) and Educational Testing Service (ETS). The 18-member Commission included university presidents, graduate deans, provosts, industry leaders and higher education scholars. Their involvement and insights were critical to the development of a report, *The Path Forward: The Future of Graduate Education in the United States*.<sup>1</sup> The report documents the strong connection between the nation's need for a highly trained workforce to drive innovation and competitiveness, progress toward addressing that need, and plans going forward to respond to vulnerabilities in our system of graduate education.<sup>1</sup>

Other reports have addressed competitiveness and presented ideas for enhancing it, including strengthening graduate education, but *The Path Forward* report was the first to connect all the dots in a way that positions graduate education as a strategic national asset. The report makes a compelling case to address vulnerabilities in graduate education now as part of a national innovation strategy.

The key assumption of the report is that the competitiveness of the United States and our nation's capacity for innovation hinge fundamentally on a strong system of graduate education. But that system faces challenges including changing demographics, degree completion rates, workforce projections for additional jobs requiring graduate degrees, and increased international competition in the higher education sector.

To address these challenges the report notes the importance of collaboration among universities, employers and policymakers. It also presents specific recommendations for each of these three sectors.

Recommendations for universities include improving completion rates, clarifying nonacademic career pathways for students, and preparing the future faculty. Employers are encouraged to increase their engagement with graduate programs in a variety of ways and to communicate the skills needed for 21<sup>st</sup> century jobs. Policymakers must help ensure that graduate education is a viable option for a growing number of U.S. citizens while simultaneously welcoming the best and brightest from abroad. Recommendations include continuing support for existing graduate programs as well as the implementation of two new initiatives to support doctoral and master's education:

- A COMPETES doctoral traineeship program to support doctoral education in areas of national need by providing direct student support through a stipend, tuition and fees, ancillary fringe costs, and other costs of education and;

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<sup>1</sup> This "Steps Taken on the Path Forward" document is an update on progress since the release of *The Path Forward*, jointly written by ETS and CGS. This document uses material from *The Path Forward* as context and serves to highlight the impact the original report has had to date.

- A new competitive grant program to provide partial funding to create new, innovative master's degree programs or reinvigorate existing ones.

The report was released at the Council of Graduate Schools' annual legislative forum on Capitol Hill on April 29, 2010. Since that time, the report findings and recommendations have been presented and discussed in a variety of venues across the country. Some of the report recommendations have been incorporated into federal policy and the role and importance of graduate education continues to be part of the national conversation about innovation and competitiveness.

This paper describes and reviews the impact of *The Path Forward* one year later and outlines ongoing issues and challenges confronting graduate education now and into the future.

## THE ROLE OF GRADUATE EDUCATION IN “WINNING THE FUTURE”

In his 2011 State of the Union message, President Obama called for the U.S. to out-innovate, out-educate and out-build the rest of the world while taking responsibility for our federal budget deficit and reforming government.<sup>2</sup> He also charted a path forward that outlined strategic investments to create 21<sup>st</sup> century jobs and win the future for America.

“This is our generation’s Sputnik moment,” said the President.<sup>3</sup> The nation’s response to the original Sputnik in 1957 was the passage of the National Defense Education Act (NDEA) of 1958 that produced a generation of scientists, engineers, and other leaders who laid the foundation for the economic success our country experienced in the past half century.

The nation must make a similar investment in education today at all levels and particularly at the graduate level. The Bureau of Labor Statistics estimates that by 2018 more jobs will require people with advanced degrees, specifically an 18% increase in jobs requiring a master’s degree and a 17% increase for people with doctoral degrees.<sup>4</sup>

Our competitiveness in the global economy hinges on our ability to produce sufficient numbers of graduate degree holders – people with the advanced knowledge and critical thinking abilities to address current challenges we face as well as those we cannot even imagine today.

Governments around the world are investing in graduate education as a key component of innovation and competitiveness. Europe already produces more doctorates in science and engineering than are produced in the U.S.<sup>5</sup> China and India are making substantial investments in their graduate education systems.

The President also addressed the issue of international talent – those students from other countries who come to the U.S. to pursue their graduate studies – and noted the importance of enabling international students who receive graduate degrees to remain in the U.S. and contribute to our economy.<sup>6</sup>

It is clear from the President's recent remarks, as well as those of other policymakers and thought leaders, that support for graduate education is critical to U.S. economic and social prosperity in the future.

## THE IMPACT OF *THE PATH FORWARD* ONE YEAR LATER

*The Path Forward* noted that institutions of higher education, policymakers and business leaders all have a stake in the process of producing well-prepared graduate degree holders. It emphasized the importance of collaboration among these three sectors, discussed vulnerabilities in our system of graduate education, and provided recommendations for each set of stakeholders.

One year later, it is clear that *The Path Forward* findings and recommendations have been used and discussed in a wide array of venues and that many aspects of the report have influenced policy considerations and proposals.

### *The University Domain*

Graduate deans and other senior officials in higher education have used the report findings and recommendations to discuss the role and importance of graduate education with a variety of internal and external audiences including university trustees, president's cabinets, university leadership retreats, Graduate Councils, general faculty meetings, graduate student and postdoctoral researcher meetings, as well as statewide and regional meetings of graduate deans.

In some states, graduate deans have used the report as the centerpiece of statewide policy forums to enhance collaboration between higher education officials, business leaders and policymakers. For example, the Illinois Association of Graduate Deans convened a statewide forum in October 2010 that included university presidents, provosts, business leaders and policymakers to discuss ways to improve partnerships and to enhance the role of graduate education in advancing the economic interests of the state. In Texas, the report was used to facilitate a discussion at the Higher Education Coordinating Board's Graduate Education Advisory Committee meeting as that body was developing its agenda for the year.

In January, 2011 CGS conducted a survey of its college and university membership to learn more about specific outcomes and impacts from *The Path Forward*. The results fell into five broad areas as follows:

- **Influencing Critical Decision Processes**  
Actions in this category include helping to shape the strategic plan for graduate education within the university and creating structures to implement the university's graduate education aspirations.
- **Changing Priorities**  
When utilized in strategic planning processes, *Path Forward* analyses and recommendations may set or even change priorities for the university. For example,

in one institution of higher education, the report resulted in making graduate fellowships the top priority in fundraising.

- **Creating New Communication Channels**

The report has been used to facilitate conversations on change and, in one case, resulted in an open letter from the dean to faculty inviting discussion about graduate education issues. In another example, the Virginia Association of Graduate Schools used the report as the catalyst for developing a video of graduate students from institutions in the state in a variety of fields who discussed the degrees they were pursuing and the careers and jobs for which their degrees prepared them.

- **Shaping Evaluation Metrics**

The report recommendations for universities affirmed commitments to developing and using outcome measures and to establishing initiatives focused on persistence and completion. Graduate schools are also pursuing policies to enhance transparency in offering prospective and current students information related to career outcomes and placements.

- **Introducing New Programs**

Several institutions have launched new degree programs and new professional development programs for graduate students. Some institutions are also pursuing increased international recruitment as well as establishing dual and joint degree programs.

### *The Government Domain*

Several recent policy initiatives reflect the relevance and impact of *The Path Forward*. In January, the President signed the America COMPETES Reauthorization Act of 2010 into law. This law authorizes increases in spending for agencies and programs that are vital to maintaining American competitiveness and innovation in the 21<sup>st</sup> century global economy. It reflects recommendations offered by the National Academies' *Rising Above the Gathering Storm* report, with the goal of increasing investment in research; expanding opportunities in science, technology, engineering, and mathematics (STEM) education; and building the infrastructure necessary to drive innovation. While recognizing the constraints on government spending, it also authorizes strategic investments in the scientific and technological enterprise necessary to sustain U.S. prosperity and security.

This new law recognizes the role that graduate education plays in our nation's ability to maintain a highly-skilled workforce. Key provisions in support of graduate education include:

- Authorizing the National Science Foundation (NSF) to offer grants to “implement or expand research-based reforms in master’s and doctoral level STEM education that emphasize preparation for diverse careers” through the 21<sup>st</sup> Century Graduate Education provision.<sup>7</sup>

- Linking increased funding for the Graduate Research Fellowships (GRF) with the Integrative Graduate Education and Research Training (IGERT) programs to ensure balance between the programs.
- Reauthorizing the Protecting America’s Competitive Edge (PACE) fellowship program at the Department of Energy (DoE) for students pursuing doctoral degrees in math and engineering, as well as increased funding for DoE’s Office of Science.
- Reauthorizing funds for the Department of Education to support competitive partnerships to develop and implement part-time master’s degree programs in math, science, or critical foreign language education for current teachers and one-year master’s degree programs in teaching for current STEM professionals.
- Mandating a study of the scientific workforce in oceanic and atmospheric research and development to investigate whether there is a shortage in the number of individuals with advanced degrees in oceanic and atmospheric sciences with the ability to conduct high quality scientific research in NOAA related fields.
- Mandating a study of our nation’s “Economic Competitiveness and Innovative Capacity” and development of a national economic competitiveness strategy.<sup>8</sup>

The Administration’s Fiscal Year 2012 proposed budget includes a number of strategic investments to develop the talent and infrastructure needed to position the U.S. to retain its leadership role. These proposed investments include a 45% increase in funding for the GRF program at NSF, an \$11 million increase for the Graduate Fellowship Program in the Office of Science at the Department of Energy, and an increase to the Ruth Kirchstein National Service Award program at the National Institutes of Health.<sup>9</sup>

The role of graduate education in developing highly skilled talent is acknowledged by both political parties. During a recent forum at the Woodrow Wilson International Center for Scholars, one Republican House member noted that while many criticisms are leveled at American education, the U.S. is still leading the world in doctoral education and that many international students are still coming to the U.S. because of that quality.<sup>10</sup> While this is true, *The Path Forward* noted that the dominant position of U.S. graduate education is now threatened as the rest of the world rapidly catches up through substantial investments in their graduate education systems and in the undergraduate programs that feed those graduate programs.

In a recent speech, another Republican House member noted “The U.S. graduates only half the number of physicists that we did in 1956. Unless we do things dramatically different, including strengthening our investments in research and education, the 21<sup>st</sup> century will belong to China and India.”<sup>11</sup>

### *The Industry Domain*

Since the release of *The Path Forward*, a great deal of policy attention and discussion has focused on jobs and the need to prepare the future American workforce with the skills necessary in the 21<sup>st</sup> century global economy. Investing in education at all levels and

particularly at the graduate level is critical to developing the highly skilled talent needed to prosper in a world where innovation, creativity and research are key. Some industry leaders are actively engaged in efforts to support education and research.

In a recent op-ed, Stanley S. Litow, President, IBM International Foundation and a member of the Commission on the Future of Graduate Education, noted that “companies want to hire employees who have broad, advanced education; can learn quickly as they are trained in specific jobs and have a hunger for continuous education and skill development.”<sup>12</sup> He added, “We also need deep thinkers who can help address business and societal problems and build solutions for a smarter planet,” and urged the nation to invest in developing the highly skilled workforce we need to make us more competitive and spur a sustained economic recovery.<sup>13</sup>

The importance of investing in education and the development of human capital was also emphasized in a recent opinion piece in *Politico* by Kevin Sharer, CEO of Amgen. He noted that our educational system has weaknesses and that we are falling ever further behind our global competitors. He urged the federal government to demonstrate its commitment to our economy and to our future workforce.<sup>14</sup>

There are other examples of corporations collaborating directly with universities in support of higher education and research. Recently, Intel Corporation announced plans to invest \$100 million directly into U.S. university research over the next 5 years to drive innovations in computing and communications. The company plans to open Intel Science and Technology Centers across multiple universities over the course of this year.<sup>15</sup>

One of the best examples of university/employer/government collaborations comes from the Professional Science Master’s (PSM) initiative. Universities and employers collaborate from the beginning to design PSM programs to develop talent that is needed in local, regional or national businesses, non-profits and governments. Government support for the PSM was accomplished through awards made by NSF to over 20 institutions of higher education for the purpose of establishing new Science Master’s programs or enhancing existing ones.

## THE GRADUATE EDUCATION AGENDA GOING FORWARD

While *The Path Forward* provided a comprehensive overview of trends in graduate education and recommendations for enhancing the enterprise, the report also identified additional areas for further research and public policy attention.

One area focuses on the need to develop a better understanding of student aspirations. How do students, particularly undergraduate students, evaluate and pursue career choices and associated study at the graduate level? At the high school level, juniors and seniors are bombarded with pamphlets and brochures from colleges urging them to attend college, but there is no comparable effort to recruit undergraduate students into graduate school. Students are frequently left on their own, with little guidance as to the benefits of a graduate education and little help in selecting an appropriate institution or program of study.

Similarly, little data exist to indicate what employers expect of new graduates entering the workforce, and the current data available focus primarily on 4-year undergraduate degree recipients. The results of several recent surveys highlighted the need for a workforce with technical skills, higher degrees and well developed “soft-skills” such as professionalism, work ethic and time management, all of which are common aspects of graduate education. These survey results suggest the need for higher education and industry to work closely together to ensure that graduate degree holders are well prepared for the demands of the workforce.

An area of considerable importance relates to financial support for graduate students. This issue is consistently identified as the top concern of graduate deans when asked to prioritize their most pressing issues in an annual survey conducted by CGS. The current financial environment in the country has placed even more stress on federal financial support for graduate students.

In a recent opinion piece Morton Kondracke, political commentator and journalist, wrote that we are “torching America’s seed corn.”<sup>16</sup> That seed corn is federally funded research that produces the discoveries and trains the scientists that eventually create millions of skilled jobs. Clearly, there is an opportunity going forward to develop a new pact between government, graduate institutions and employers to provide innovative and alternative ways to financially support students interested in earning graduate degrees but there is no substitute for the federal investment in supporting graduate education.

Perhaps the major issue confronting the graduate education enterprise in the future concerns the lack of information and knowledge about the eventual careers of people with graduate degrees. What do graduate degree holders do with their degrees? How well did their graduate education prepare them for the challenges of the workplace and their chosen occupation?

*The Path Forward* identified a gap in knowledge about the relationship between student aspirations for future careers, universities’ understandings of and actions in relation to these realities, employer actions that facilitate success for people with graduate degrees, and the relationship of government policies to these issues.

Future research and policy analysis and recommendations to be undertaken by the Council of Graduate Schools will address:

- Students’ aspirations and expectations for their graduate education in relation to desired career goals
- Current programs and policies in place at universities to prepare students for desired careers and pathways that lead to such careers
- Employers’ expectations for graduate degree holders and policies and practices for signaling career pathways within industries and individual corporations
- Public policy actions to enhance and support a strong graduate education system that aligns with student success and development of a highly skilled workforce.

Further exploration of career outcomes of graduate degree holders is vitally important to ensure that the U.S. remains competitive and enhances its innovation capacity. Other countries recognize graduate education and human capital development as the engine of economic competitiveness, and they are making investments accordingly. China and India are

investing substantially in graduate education programs and other governments, including Canada and Australia, are offering attractive opportunities to international students.

If we are to win the future we must out-educate and out-innovate the rest of the world<sup>17</sup> and investing and supporting a strong system of graduate education that prepares future leaders and experts in key areas must be a central component of our national innovation strategy.

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