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Graduate Education 2020: CGS Launches Annual Research Symposium on the Future of Graduate Education

This year (2006) marks the twentieth anniversary of the CGS/GRE Enrollment and Degrees survey. In recognition of this long-standing partnership, CGS and ETS will collaborate on a new initiative, "Graduate Education 2020," to establish a major national conversation on the future of graduate education. This conversation will span a decade, and will result in an annual symposium to be conducted in concurrence with the CGS meeting in December each year. The symposium will consist of a plenary session at the meeting featuring scholarly presentations based on three commissioned papers on key aspects of the future of graduate education globally. The product of this symposium will be a substantial annual publication including commissioned papers as well as plenary proceedings.

CGS President Debra W. Stewart announced the new initiative at the 2005 Annual Meeting in Palm Springs, California by way of introducing three guest speakers: Michael Nettles, Vice President, Policy Evaluation and Research, ETS, to present research on the domestic talent pipeline issues; Susan K. Brown, Assistant Professor, Sociology, University of California-Irvine, to discuss demographic trends and their likely impact on graduate education; and Keith Maskus, Professor and Chair, Economics, University of Colorado at Boulder, to discuss research on the impact of international students on U.S. research productivity. Each scholar was asked to speculate on the future of graduate education based on their unique disciplinary and research perspective. The conversation that ensued from these presentations exemplified the value of a national forum to discuss and debate the future of graduate education.

Michael Nettles spoke on the opportunities and challenges posed by the pipeline of domestic students. Dr. Nettles described a number of trends, some showing signs of progress while others reflected the need for continued work, regarding America's diverse student pipeline. The good news is that postsecondary enrollment and degrees are "rising steadily" at the associate through doctoral levels. These increases differ across racial groups, but overall increases, between 1993 and 2003, occurred: in associate degrees (~23%), in bachelor's degrees (~20%), and in post-baccalaureate degrees (master's, doctoral, and first professional) (~124%). Importantly, African American, Asian American, and Hispanic American bachelor's degree attainment rose faster than the overall increases.

Another positive finding related to student expectations (See Figure 1). Information from the Department of Education showed that the number of high school students who expect to attain graduate or professional degrees has approximately doubled in the last two decades. In 1980, for instance, only 19.2% of African American high school students expected to earn a graduate or professional degree; by 2002, 36.1% had similar expectations. This increase is similarly reflected in white, Native American, Hispanic, and Asian American high schools students. While we know that, historically, only a fraction of students who expect to attain a graduate degree have in fact accomplished this goal, increasing expectations are likely a harbinger of increasing outcomes.

Dr. Nettles also presented some important cautions, particularly concerning the level of academic progress in secondary education. At the fourth grade, a majority of every racial group's reading scores were below proficient on the National Assessment of Educational Progress (NAEP). With the exception of Asian Americans, this is also true of fourth grade NAEP scores in mathematics. Similarly discouraging conclusions can be drawn from findings on elite university attendance, SAT scores, and SAT test taking.

Overall, Dr. Nettles offered a complex portrait of the current state of affairs, one that presents substantial opportunities for the future of graduate education, but also evidence that stronger efforts are needed to ensure that these opportunities are seized upon. He called for efforts to "reach out to early years of education" through recognition and rewards for high achievement of U.S. students and schools and improved public policies to prepare and fund students for graduate education.

Susan K. Brown (and co-author Frank D. Bean), University of California-Irvine, approached the subject of the future of graduate education from the perspective of demographic change and immigration. One of the most intriguing findings related to the changing size of the university cohort (those individuals in the US population age 20-24). At any point in time, this age group comprises the primary pool of students who will attend college and ultimately graduate school. In the 1990s, the size of this cohort was in decline: by 1% between 1990 and 2000. Projections, however, show that this cohort will increase by approximately 10% between 2000 and 2020. Scholars have referred to this demographic phenomenon as the "Baby Boom Echo" or "Echo Boom." Other research has demonstrated that

this Echo Boom will be driven primarily by increases in the population of Hispanic Americans and Asian Americans; by contrast, growth among white, non-Hispanic Americans is projected to be minimal. Given what is widely understood about the underrepresentation of Hispanic and African American students in U.S. postsecondary and graduate education, demographic projections suggest that in order to maintain and/or expand current levels of domestic participation in graduate school, effective inclusiveness initiatives must be taken to scale.

Dr. Brown also addressed the international dimension of graduate education by discussing the relative decline of international students over the last several years. Her prognosis for 2020 was that although the U.S. share of global science and engineering degrees is likely to continue to shrink, several steps could be taken to limit the declines. Three specific recommendations were: raising the ceiling on high-skilled visas; improving the funding for basic research; and, making the pay and working conditions more appealing to science and engineering students and postdocs.

Keith Maskus offered another perspective on the future by expanding the discussion to universities and the globalization of research. Much of Dr. Maskus' findings were based on a paper he has authored on the contribution of foreign graduate students to US innovation. Using econometric methods, he investigated the untested hypothesis that there were considerable economic benefits associated with international graduate students. In particular, he looked at the relationship between international graduate students and patent applications, which are a useful measure of national research productivity. His conclusions suggest that, holding all else constant, a 10% rise in the share of total foreign graduate students would increase patent applications by approximately 6,600 (4.7% of the total). The "marginal impact" of an additional foreign graduate student is .63 patent applications, meaning that for every 100 additional foreign graduate students we would expect to gain 63 additional patent applications.

Dr. Maskus also discussed the larger issues of globalization and university research. He suggested that in the university, as in the industrial sector, globalization is likely to result in a decline in the monopoly the US has maintained over research innovation. According to Dr. Maskus, this finding is neither surprising nor necessarily an unwelcome problem. Increasing innovation abroad can, for instance, lead to higher quality products at lower price available in the US. However, key to maintaining short term prosperity and longer term economic growth is for the country to sustain a leading role in research and innovation. As a part of this global leadership, he suggested that in the next 15 years international cooperation and partnerships in

research may be a critical component of maintaining competitiveness. While we have traditionally thought of technology transfer primarily occurring from the US to other countries, the future may bring an increasingly valuable form of technology transfer back to the US, as the country and its researchers become the beneficiaries of scientific advances and innovations abroad.

These three speakers helped to set the stage for the high level of national discussion and analysis that we expect to

result from the Graduate Education 2020 initiative. In preparation for the first annual Graduate Education 2020 plenary session in December 2006, CGS will convene an advisory committee to identify the major trends influencing the direction and rate of change in postbaccalaureate graduate education globally. The committee will be composed of leaders from the graduate education community as well as selected global leaders with long-range perspectives on future demographic, social, economic, curricular, and technological trends.

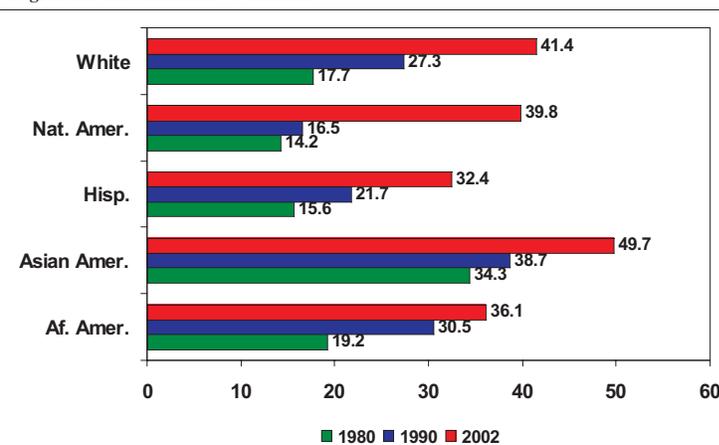
Some of the world's leading thinkers on the future of graduate education will be invited to

prepare papers on trends identified by the advisory committee. Thinkers will include but are not limited to traditional academic scholars. Corporate, political, and media leaders, as well, will be invited to address topics such as: national enrollment patterns and demographic projections; current and projected international student flows; doctoral success indicators and doctoral outcomes; and the impact of academic/workforce partnerships (e.g., professional master's degrees) on broad graduate enrollment and admissions practices.

In addition to the designated plenary session at the CGS Annual Meeting that will feature scholarly presentations by authors, these commissioned works, supporting annual events related to the symposium, will include a special reception honoring the distinguished thinkers, scholars and guests, press conferences on findings, etc. Papers and proceedings from the annual CGS/ETS Graduate Education 2020 Symposium will be published in an annual monograph series; CGS will supplement that series by making full use of electronic media to foster the national conversation.

The graduate community is now struggling to track and interpret changes in graduate education globally. It is crucially important to devote significant scholarly effort to this topic now because the rapidly changing international landscape and changes in the demographics, content, delivery, and outcomes of graduate education will have a dramatic impact on how we conduct graduate education at every level from admissions through graduation. An enhanced understanding of graduate student outcomes, international student mobility, and the impact of enrollment trends would strengthen existing assessment tools and better serve future stakeholders of graduate education, who will likely consist of greater proportions of

Figure 1: High School Students Expectations of Attaining a Graduate or Professional Degree Have Doubled in Two Decades



Source: Nettles (2005) data taken from U.S. Department of Education, National Center for Education Statistics. (2004). The Condition of Education 2004 (NCES 2004 -077).

underrepresented minorities, professional degree-seeking students, and non-traditional (adult and part-time) students. If international applications and enrollments decline due to increasing competition abroad, it is crucial that we as a community respond in ways that make graduate education in the US more attractive to top talent from other countries and from the US. We must also develop new tools to better assess the indicators of success of these non-traditional and under-represented students, for it is these students who will provide the future pool of domestic talent for many graduate programs

that have long relied on significant numbers of international students. This national conversation, enabled by the Graduate Education 2020 project, will help institutions respond to these inevitable future trends and will identify other significant trends. But more importantly, the proposed conversation will help all stakeholders in the graduate education enterprise better understand how to situate postbaccalaureate education in the knowledge-based society globally.

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