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Support of Graduate Students and Postdoctoral Researchers in the Sciences and Engineering: Impact of Related Policies & Practices

By Robert E. Barnhill, CGS/NSF DIR 2003-2004; Helen S. Frasier, CGS Intern; and Dan Stanzione, AAAS Fellow

On June 17-18th, 2004, the National Science Foundation (NSF), the National Institutes of Health (NIH), and the Council of Graduate Schools (CGS) sponsored a workshop at the Washington, D.C. headquarters of the American Association for the Advancement of Science (AAAS) to discuss emerging issues, research, and current practices related to financial support for graduate students and postdoctoral researchers.

The meeting was one in a series of events designed to examine and provide recommendations that will enhance our knowledge and improve practices and policies associated with graduate and postdoctoral education and research training. Among the 101 people in attendance were: graduate deans; graduate students; postdocs; faculty from science, technology, engineering, and mathematics (STEM) fields; labor economists; and representatives from federal agencies.

The specific goal of this workshop was to consider the role and impact that student financial support plays in encouraging U.S. citizens to pursue and complete doctoral and postdoctoral studies in STEM fields. Richard Freeman of the National Bureau of Economic Research (NBER) was commissioned to prepare an analysis of NSF data on graduate student support to serve as a focal point of the workshop. Research presented at the workshop and resulting discussions highlighted: elements of the graduate student and postdoctoral support packages including mode, duration, amount of stipend, health care and other benefits; and indicators of student progress such as completion rate and time to first professional position. The workshop deliberations set the stage for developing best practices and outlining a research agenda on these topics, as well as building a community of researchers, educators, and stakeholders to maintain an ongoing dialogue in this critical area.

The particular topic for this meeting was driven by the recent dramatic changes in NSF stipend policy. Over the last 5 years, the stipends awarded by the premier NSF programs for supporting graduate students have doubled, from \$15,000/year to \$30,000/year. Although the increase in the NSF stipend level has a direct effect on a

relatively small fraction of the total population of STEM graduate students throughout the country (about 5,000, or 2%), the change has caused ripple effects throughout both the graduate and postdoctoral enterprises. In some cases, the policy changes have resulted in stipend levels for graduate students that exceed salaries of postdocs. Considering the greater likelihood that new Ph.D. graduates in STEM fields will accept at least one postdoctoral position coupled with the increasing length of the postdoctoral research position, the workshop addressed the challenges and needs of both populations.

During the first research session, Tanwin Chang (NBER and Harvard University), focused on the question of quantity versus quality. The preliminary findings of his research team, under the leadership of Dr. Freeman, indicated that among those who complete the doctoral degree, financial support in the form of stipends helped to reduce time-to-degree (TTD), and that the average quality of doctoral students (as measured by GRE scores) declines as the number or quantity of awards per applicant increases. Dr. Chang stated that for many of today's scientists, the time spent in graduate school and postdoctoral research comprises approximately 1/4 of a scientist's "career" (6 years of grad school + 4 years of postdoc = 10 years of a 40-year post-baccalaureate career path in the sciences). Respondent William Zumeta (University of Washington) made two principal points. He first noted the uncertainty that graduate students faced in obtaining autonomous professional positions upon conclusion of their graduate and postdoctoral experiences, and stated that this may differentially affect minorities and females; second, he recommended looking at the whole pipeline including the postdoctoral years.

The discussion topics in the second research session, provided separately by Joan Burrelli (NSF) and Michael Nettles (ETS), offered different types of insight on the financial support problem. Dr. Burrelli noted that generally speaking, doctoral students in science and engineering fields received more than one mode or type of support throughout their graduate career. She found that on average, students received 2.5 types

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of support ranging from fellowships, to teaching or research assistantships, to self-support. Research assistantships were the most frequent type of support and were common in four of the top five combinations of financial support. Dr. Nettles highlighted a number of ways in which graduate schools, particularly graduate deans, can draw attention to and positively influence the graduate student and postdoc support models. He argued that increased attention to student funding options, mentoring activities, and research productivity are necessary next steps for graduate deans.

The afternoon panel consisted of a group of representatives from a series of stakeholder focus group meetings. The focus groups were held with a group of graduate deans, members of the National Postdoc Association, the Council of Scientific Society Presidents (CSPS), a group of graduate students, and a group of AAAS fellows (representing recent graduates). A number of concerns about the current state of affairs were voiced during the session, as were a few suggestions and possible courses of action. Two of the most prominent points among the panelists were the need for support packages that provide at least basic subsistence and the need for health care coverage. Both the graduate student and postdoc representatives stressed that a requirement for adequate health care coverage was preferable to further increase in the basic stipends offered by NSF. The focus groups that represented greater numbers of junior members of the research community cited the uncertainty of obtaining a professional position at the end of extensive graduate and postdoctoral periods as the most critical problem.

Focus groups addressed specific, additional topics. Graduate deans discussed the need for a more holistic view of the costs of graduate education. They emphasized that support is more than just stipends; the integration of students into their programs and how stipend and tuition support in various forms can be used to facilitate that integration is a key issue. Graduate deans also discussed the fact that different forms of support may be more critical at different times in a student's career and that different students have different needs. There is a need to structure support so that it leads to desired outcomes— independent scholars, qualified, well-prepared teachers, researchers able to work in interdisciplinary environments etc.

The CSPS focus group emphasized the national need among STEM graduates for more partnership between science and entrepreneurship. The Postdoc focus group recommended limiting the number of Ph.D.s in those fields that are "market-saturated," discussed the importance of mutually agreed upon conditions for their positions, and advocated a greater emphasis on professional development.

Once the wish lists provided by the focus groups were out on the table, the workshop agenda focused on university and national issues related to stipend level vs. cost-of-education (COE) allowance. A number of graduate deans questioned the government's priorities in raising stipends, but not COE allowances. Economists in the audience felt that increasing stipends was a crucial strategy for enticing citizens into science careers. Federal agency representatives felt that the political reality necessitated higher stipends, but that elevating stipend levels did not signal a choice between stipends or COE. Agency representatives advised advocacy of the COE issue to be directed at federal political units, where such policy decisions are made, rather than at the agencies.

While issues of support for underrepresented students were present, to varying degrees, in each of the workshop sessions, Margaret Daniels Tyler (Gates Millennium Scholars Program) and Anthony Rene (NIH) provided additional targeted information. They discussed strategic financial considerations in enhancing the minority presence in STEM graduate cohorts. Dr. Tyler made the key observation that "relationship building is the cornerstone" of STEM inclusiveness efforts.

Dr. Rene outlined specific NIH programs available for minority students.

The second day of the workshop began with a series of observations about STEM trends from Alan Leshner (AAAS). According to Dr. Leshner, a tension exists among the needs, types, and levels of available support for graduate and postdoctoral researchers. Assistantships serve multiple functions and must prepare trainees, graduate students, and postdocs for a wider range of employment opportunities. He also notes that two of the most rapidly changing trends in science and its conduct reflect the growing roles of industry and technology. Industry is providing a greater share of support for research and researchers, and is similarly performing a greater share of the research. Where science once drove changes and developments in technology, the reverse is quickly emerging as the stronger trend. Another point is that as "big science," that is, larger team science, continues to grow, multidisciplinary training is essential. Dr. Leshner concluded with two questions regarding the future of our research agenda -- first, are our training approaches appropriate for the science enterprise of the future?, and second, are we financing training in appropriate ways?

Richard Freeman continued the discussion of the research agenda by questioning what science workforce policy seeks or needs to maximize. His initial response was that the U.S. national agenda must change and that the U.S. needs to produce high quality researchers as quickly and cheaply as possible. In order to increase the number of U.S. citizens completing the doctoral degree in STEM fields, Dr. Freeman maintained, stipends are an important tool, but we must also improve career attractiveness. He recommended that we consider alternatives to current funding models, particularly the distribution of funds during the course of a graduate career and the time to first professional position. (He suggested, for example, guaranteeing five years of graduate support to the Ph.D., essentially the same suggestion as was made by David Chapman (University of Utah) during the Graduate Dean's Focus Group and at the CGS Annual Meeting in December 2003.) Dr. Freeman closed by stating his opinion that the costs of spending money for stipend payments in order to increase the supply of quality researchers are minute compared to other government expenditures, yet the benefits are potentially enormous for the economic and research agenda. Graduate dean Lewis Siegel (Duke University) questioned whether the recent increase in NSF stipend levels—while sufficient to significantly reduce the number of graduate students to whom universities can provide basic stipend and health care support -- can realistically attract more students into STEM fields, since starting salaries for bachelor degree holders in those fields still far exceed the stipends offered to students about to engage in many years of graduate study with no certainty as to satisfactory employment prospects once the doctoral degree has been attained.

The final day of the workshop included a set of three breakout groups that focused separately on a potential research agenda, best practices for universities, and variables for setting stipend policy. Joan Lorden (University of North Carolina, Charlotte), reporting for the focus group on research agenda, again noted the poor data on graduate students, stating, "we don't know who's coming to graduate school and why. We don't know very much about the experiences of students...while they're in graduate school, and we don't know where they go when they leave." The group studying stipend policy, led by Walter Goldschmidts of NIH, reiterated the theme that stipend level wasn't as useful a focus as considering support packages. In reporting from the group discussing university practices, Les Sims (CGS) noted "the communication and clear understanding of expectations (between faculty and research assistants) was a very strong point in the discussion."

The workshop closed with remarks by

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Approaches To Quality Assurance

By David Leyton-Brown, Executive Director, Ontario Council on Graduate Studies

Quality assurance in higher education has become increasingly important around the world for both public accountability and quality improvement. Education (and especially graduate education) has come to be recognized as crucially important to future economic and social prosperity, and governments in many jurisdictions are pressing for demonstration that their funding for higher education is well spent, that desired outcomes are achieved, and that quality is assured. The pressure for public accountability is ubiquitous, but that pressure can lead to celebration or defense of the status quo, rather than the active search for change and improvement. In addition, international student mobility has made assurance of quality and comparability and recognition of academic credentials increasingly important to students, and to sending and receiving institutions and countries.

Despite the similar genuine commitment to quality within and across countries, quite different approaches to quality assurance have been adopted. This paper will describe the major approaches, and identify the common characteristics of effective quality assurance processes.

The Unit of Analysis

Institutions or Programs -- Some processes, like US institutional accreditation, assure the quality of the entire institution, while others address individual programs (as in professional accreditation, or program assessment in most European countries), and both levels have their place.

The Authority for Quality Assurance

Governmental Regulation or Academic Self-Regulation -- Some governments directly engage in quality assurance processes themselves, which is the norm outside of North America, and is the case, at least for public institutions, in some states. Governmental regulation involves demonstration of compliance with specified minimum quality standards. The alternative to government regulation is self-regulation on the part of the university community, and tends to accord more respect to institutional diversity and autonomy, and to have at least the possibility of more emphasis on quality improvement than compliance with minimum quality standards.

Government regulation Government regulation can be found at both the institutional and program levels. Some governments approve the institutions that offer university education. New public institutions are created by legislative action. Some governments mandate a department, board or agency to advise or rule on the creation of new private and/or out-of-state institutions seeking to operate within their territory.

A second approach to government regulation is approval of all proposed new degree programs, even from public universities. This can be done formally, by the assessment of each proposed degree program against specified (or unspecified) criteria. In other jurisdictions it can be done informally, but no less effectively, by government approval of the eligibility of the program (and its enrolled students) for public funding rather than of the implementation of the program per se. Since most public universities cannot afford to offer a program for which no public funding is received, funding approval is de facto approval of the program.

The third approach to government regulation is the assessment of the academic quality of existing programs. The best known example is probably that of the United Kingdom, where the Quality Assurance Agency has systematically reviewed all degree programs in all British

universities, but similar undertakings can be found in some US states and in some other countries, such as the Netherlands or Denmark.

Finally, many governments, without reviewing the quality of programs directly, require that specified outcomes be achieved, and monitor the performance of universities on specified quantitative indicators. Sometimes public funding is tied to these performance indicators. Among the quantitative performance indicators adopted in various jurisdictions are: graduation rates, student retention or attrition, time-to-degree, student entry and exit testing, pass rates on licensing and certification examinations, post-graduation employment rates and employer satisfaction, etc.¹ A recurrent theme in the quality assurance literature is whether particular performance measures actually measure academic quality and the quality of student learning, or are simply easy (but misleading) to count.²

Self-regulation Academic self-regulation also operates at both the institutional and program levels.

Self-regulation of institutional quality is not a feature of quality assurance in Canada or Europe, but it is the centerpiece of the voluntary and non-governmental institutional accreditation system in the United States. It emerged understandably from a system of over 4000 private and public institutions awarding associate, bachelors, master's and doctoral degrees. Eight regional accreditation commissions operate in six regions to accredit institutions according to standards and criteria that have been developed over time in conjunction with the university community. The accreditation commissions are independent private bodies that receive self-assessments and conduct peer evaluations to ensure the quality of institutions and programs, encourage quality improvement of institutions and programs that have already met basic standards, and certify institutional or program sufficiency as required for the receipt of public funds and for institutional licensure by state governments, and as a partial basis for decisions about the transfer of academic credit.³ There are also various national accreditation bodies for particular types of institutions (e.g. faith-based institutions, independent or professional institutions, etc.). Accreditation is a voluntary rather than required process, though governments have accepted it as an essential part of the higher education system, by limiting to accredited institutions the payment of federal student assistance funds, or state licensure in some states.

An outstanding example of academic self-regulation at the program level in Canada is the appraisal process of the Ontario Council on Graduate Studies (OCGS).⁴ The publicly-assisted universities of the province of Ontario have voluntarily committed that they will not implement any new master's or doctoral program unless and until it has been appraised by OCGS and found to be of good quality and approved to commence. Thereafter all existing graduate programs are periodically reappraised on a seven year cycle, and any program that is found not to be of good quality must cease to admit students. Since by far most graduate programs are of good quality, the periodic appraisal process not only provides public assurance and accountability of that fact, but it provides the occasion for self-assessment and feedback from external consultants and the Appraisal Committee aimed at quality improvement.

In academic audit procedures, such as are now in place in Ontario (for undergraduate programs), universities undertake to review the academic quality of their academic programs according to standards and procedures established by the external body responsible for the audit.⁵ An audit

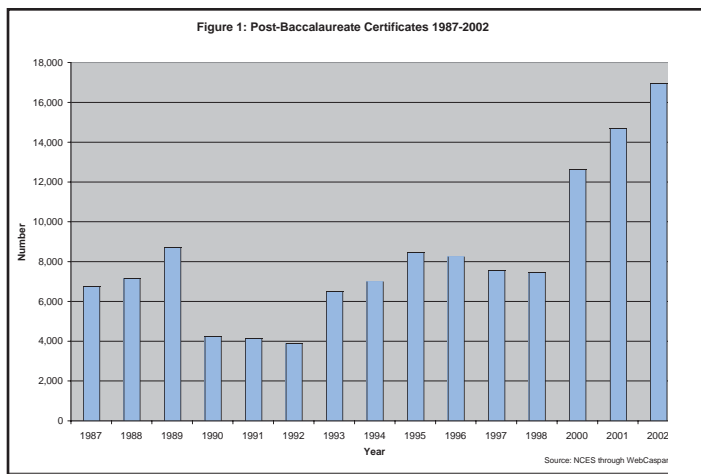
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Data Sources:

Recent Findings on Postbaccalaureate Certificate Programs

Postbaccalaureate certificate programs are one of the fastest growing components of graduate education. Once a new phenomenon in graduate education, graduate certificates have quickly entered the mainstream, and are now incorporated into the regular portfolio of many graduate schools.

This winter, CGS conducted a survey of certificate programs in conjunction with the University Continuing Education Association (UCEA). The main findings of the survey, all in line with earlier research, show graduate certificates to be flexible, market-driven programs that support, rather than compete with, other offerings of a graduate school. These findings support evidence that shows that the number of graduate certificates has increased sharply over the last fifteen years (See Figure 1).



The 2004 CGS/UCEA survey is a follow-up to a previous survey that the two organizations conducted in 2001. Each organization conducted a survey of their membership with a similar set of questions designed to update our knowledge of the status of graduate certificates in the U.S. A publication is now in development that analyzes the results across the two surveys. This article summarizes only the CGS survey results.

The 2004 Postbaccalaureate Certificate Survey
 Over 50% of CGS members responded to the survey, with similar percentages of private, public, research, doctoral, and master's institutions replying. Overall, 76% of responding institutions reported that they offered at least one cer-

tificate program. Public institutions were much more likely (86%) than private institutions (50%) to offer a certificate program. Master's-granting institutions were the most likely (77%) to offer a certificate program.

There is a wide range of offerings in graduate certificate programs. Institutions ranged from offering a single program to as many as 78 programs. Programs in the field of education,

Table 1: Authority for approving certificate programs

	Yes	No
Authority vested in one unit	79%	21%
If so, which unit?		
Graduate school	58%	
Other unit	28%	

social sciences, and engineering were the most frequently cited. Nursing, gerontology, and information technology remain some of the most popular programs.

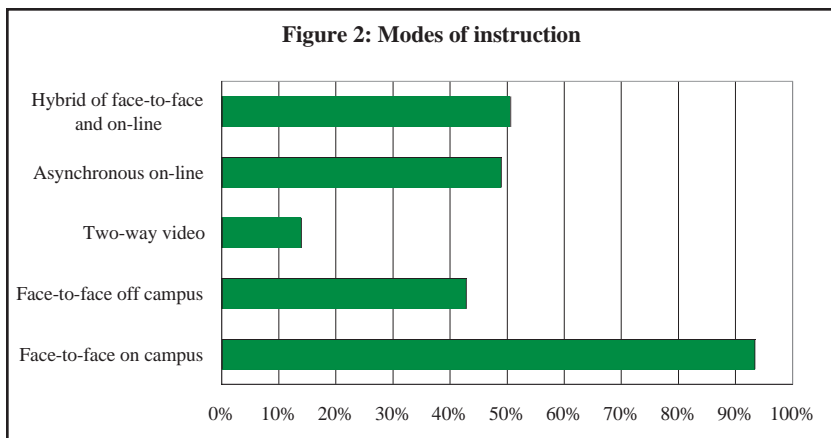
How are Certificate Programs Run?

The survey reveals that graduate schools maintain control over graduate certificate programs at most institutions (See Table 1). Nearly 80% of institutions reported that they had authority vested in a single unit on campus and, of those institutions, 58% had a graduate school that was in charge.

Graduate certificates resemble traditional graduate programs in terms of the delivery of course work (See Figure 2). More than 90% of graduate certificates use face-to-face, on-campus instruction. Approximately half of the institutions (51%) reported using a hybrid approach that combines face-to-face and on-line instruction.

What Does the Typical Graduate Certificate Look Like?

Admissions requirements for graduate certificate programs resemble admissions standards for other graduate programs. Over 60% of institutions reported the bachelor's degree as a requirement and almost 40% use the same requirements as the graduate school uses overall. Only a handful require additional qualifications (11%) or a master's degree (18%).



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does not assess the quality of those programs selected for the audit -- that review was previously conducted by the university. Rather an audit tests for the compliance of the university's program review policy with the standards and procedures enunciated by the external body, and for whether the actual reviews examined by the auditors were implemented fully in accordance with the university's policy. Thus an audit is concerned with process rather than direct assessment of academic quality. Its contribution to public accountability rests upon its demonstration that the quality of every program in the university is regularly reviewed according to transparent and sound procedures and standards that are verified by external audit. Its contribution to quality improvement rests upon the cyclical reviews of each individual program, and upon the logic that an improvement in quality assurance processes and attention of program members to quality issues will lead to improved academic outcomes.⁶

Characteristics of Good Practice

Effective quality assurance processes have several common characteristics:

- They begin with a self-study by the members of the program, which necessarily includes the collection, presentation and analysis of relevant data about the program. Nothing is more important to the successful review of any program than the self-appraisal by its members, but nothing is more variable in its quality and effectiveness than that self-appraisal.
- They involve peer review, and involve one or more external reviewers who report on a site visit.
- They result in judgment/decision, and reach closure. A decision is made by the responsible body (whether that is external or internal) as to the quality of the program and any needed remedial actions.
- They are mission-based. They respect the diversity and autonomy of institutions and programs by assessing quality against their mission and objectives rather than against some inflexible standard.
- They seek quality improvement as well as assurance that threshold standards are met. In the case of government regulatory approaches and professional accreditation, the goal of the exercise for those being reviewed or accredited is all too often to "pass" by meeting the standards, rather than to improve.
- They are cyclical rather than indefinite. Program quality is not determined once (like tenure) and then never reconsidered. Good intentions may not be fulfilled, or key faculty can depart or shift interests, and curriculum and equipment can become outmoded. Furthermore quality improvement requires recurring review.
- They serve a public accountability function, by the demonstration that every program is subject to review according to appropriate standards of quality and specified procedures. Accountability is not validated by the number of programs that fail to meet standards, and so are closed or sanctioned, but by the seriousness of the standards and procedures by which all programs are assessed, and by the quality of the programs that have been successfully reviewed.
- They emphasize student learning, and the learning objectives and outcomes of the program. Earlier quality assurance processes placed great importance on inputs that can be objectively measured and assessed, such as the number of sufficiently qualified fac-

ulty members, the library, laboratory facilities and equipment, or learning and study space. However, inputs are necessary but not sufficient for quality. In recent years, increasing attention has been paid to learning objectives and learning outcomes, best defined by the question "What do you want graduates of your program to have learned and/or accomplished, and how will you know that they have learned and/or accomplished it?"

Programs that know what they intend their students to achieve have a better chance of having their students actually achieve what is intended, and of understanding whether those intended outcomes can be achieved more effectively. A workshop on student learning outcomes summarized the types of direct and indirect evidence of learning outcomes that is increasingly being considered in US accreditation processes.⁷

Standards

All quality assurance processes define the standards or criteria that must be addressed in the self-appraisal and by external reviewers. However, in some cases what are called standards are actually factors to be taken into consideration. In other cases, there have been systematic attempts to define degree level standards or classification frameworks. US regional accreditation standards, which are often perceived in other countries as being of the first kind, encompass such major higher education activities as: curriculum, faculty, academic standards, student services, academic support for students, financial capacity, facilities, organization and governance, and expected student achievement (i.e., student learning outcomes), and expected university policies on such issues as conflict of interest, academic freedom, release of information, general education, institutional autonomy and collegial governance.⁸

By contrast, elsewhere with overwhelmingly public university systems, the trend is away from US-style institutional accreditation, which in many countries is perceived as not involving explicit academic standards, and more toward program accreditation, involving the definition of degree level standards.⁹ These standards have been built both from the bottom up (i.e., from specific bodies of knowledge, competencies and skills to more generic ones), and from the top down (i.e., degrees of separation from the creation of new knowledge). The governments of Europe have set a target date of May 2005 for the development of a common Europe-wide qualifications framework, which will surely have broad international visibility and impact. An example of what might be expected of that European qualifications framework is the descriptor for qualifications at the doctoral level (which contrast with parallel but lesser standards for the non-Honours bachelors degree, the Honours Bachelors degree and the Master's degree) from the pioneering UK Quality Assurance Agency.¹⁰

Many will find these standards unremarkable, and in accordance with what is widely understood and expected of a PhD. However, the specification of such standards in a quality assurance regime has consequences. It means that accreditation or quality review will necessarily examine whether the standard is explicitly met, in every detail, and in every graduate. It obliges the institution or program to collect data to demonstrate that the standard has been met, and the requisite outcomes achieved, and to design its programs so as to generate those outcomes, and that data.

There will remain a variety of approaches to quality assurance, with different units of analysis, responsible authorities, and formats. However there is increasing consensus on the major features and procedures. It is to be sincerely hoped that

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CGS Announces New NSF/DIR Carol Lynch

The Council of Graduate Schools (CGS), in collaboration with the National Science Foundation (NSF), announces the appointment of the 2004-2005 CGS/NSF Dean in Residence, Carol B. Lynch.

Dr. Lynch has been the Dean of the Graduate School at the University of Colorado at Boulder since 1992; she was also the Associate Vice Chancellor of Research (1992-2001) and Vice Chancellor (2001-2004) at UCB. Prior to that appointment, she was Program Director, Population Biology and Physiological Ecology at NSF (1990-92) and at Wesleyan University (1973-1990) where she was a faculty member and later Dean of the Sciences. In 2001 she was named as the first CGS/NSF Dean-in-Residence.

Dean Lynch holds degrees in zoology from Mount Holyoke College, the University of Michigan, and the University of Iowa. She has been the recipient of several grants from NIH, NSF, NATO, and others. Her research has been recognized with numerous fellowships and awards, including being elected as a Fellow of the American Association for the Advancement of Science in 1998. She is a member of many professional societies and has served as the president of the Behavior Genetics Association and the Western Association of Graduate Schools.

The author of numerous publications, Dr. Lynch has also reviewed manuscripts for many journals. She has served on accreditation teams at several universities and participated in many studies and panels.

"Carol Lynch has an extraordinary record of achievement in graduate education," said Dr. Debra W. Stewart, CGS President. "She is a local, regional and national leader in graduate education who will bring valuable experience and perspective to the CGS/NSF Dean-in-Residence program. We are

delighted to have her once again accept this leadership position."

Dean Lynch will serve as the CGS/NSF Dean in Residence for six months, beginning in September. "Having been in the enviable position of helping to shape the CSG/NSF DIR program, I am thrilled to have the honor to return to Washington for a time and to participate in the exciting initiatives at CGS and at NSF. I hope that the graduate community has seen the value added of this position, and will contact me with any advice, ideas, or suggestions," said Dr. Lynch.

According to Dr. Stewart, "The CGS/NSF Dean-in-Residence Program was created to provide a mechanism for ongoing and substantive communications between senior administrators at universities providing graduate education and the NSF, a major funder of graduate support programs. The program is a distinct opportunity for an outstanding graduate dean to bring to the NSF insights, perspectives, and the practical experience of a senior administrator at a research university."

Dr. Biana Bernstein, the Director of the Division of Higher Education at NSF, noted, "The Dean in Residence serves as the liaison between graduate administrators and the federal agency that funds science and engineering research and supports, directly or indirectly, close to 25,000 graduate students per year. The NSF Division of Graduate Education appreciates the fine work of Dr. Bob Barnhill, the 2003-2004 Dean in Residence, and is pleased to welcome Carol Lynch, an experienced research and graduate education administrator."

For more information on the CGS/NSF Dean-in-Residence program, visit the CGS website at www.cgsnet.org.

CGS Summer Workshop & New Deans Institute a Great Success!!

A record number of over 200 people attended the 2004 Summer Workshop and New Deans Institute held in July in San Juan, Puerto Rico. Thank you to the CGS Board, meeting presenters and the following sponsors for helping to make the meeting a success: University of Puerto Rico, Rio Piedras Campus; Educational Testing Service; GradSchools.com; Pfizer Inc; ProQuest Company/UMI Dissertations Publishing; and Thomson Peterson's.

CGS Welcomes New Members

New Institutional Members:
Savannah College of Art and Design
The University of North Carolina
at Pembroke

New Corporate Partner:
The Yardley Research Group

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Judith Ramaley (NSF), who posed to the group questions on support issues, particularly concerning the role of the federal government and whether federal funding agencies should lead or follow changes in support packaging and the shaping of university priorities. Dr. Ramaley went on to say that neither modern graduate or postdoctoral study fit the academic patterns of the past, and that all of the partners working to provide financial support -- the federal agencies, universities and others -- should take this into account.

Several themes emerged over the course of the workshop:

- Development of better indicators and more tracking of student success and careers are needed.
- While it is not clear how attractive stipends make graduate/postdoc science careers, it is clear that inadequate support can be a barrier. The provision of adequate health care coverage is an essential part of the decision to pursue a STEM graduate/postdoc career.
- A policy of supporting students end-to-end would be a good best practice. Collaboration is necessary between federal agencies and universities to develop a best practice policy (e.g., universities offer graduate students five years of support where 2-3 years are provided by a federal fellowship with the remaining years funded through university guaranteed research and teaching assistantships.)

Conclusions

The workshop participants concluded that money does, in fact, matter. However, the relationship between financial policy and outcomes is not straightforward. To those in the process, while stipends are important, career prospects are of equal or greater importance. Relevant measures include the attractiveness of early career positions and the time it takes to secure a permanent position. Furthermore,

evaluating either time-to-degree or length of postdoctoral appointment independently is not as important as investigating the time to first professional position.

The effects of stipend policy can be asymmetric. Most felt that while slightly higher stipends may not necessarily attract students, poor stipend policies could certainly drive many away. Stipend policy must account for no less than, and preferably better than, a minimum level of subsistence, of which health care is a mandatory aspect, particularly as graduate and postdoctoral appointments become longer.

A recommendation of the workshop is that support be examined as a total package. Few students use a single mode of support, so understanding the efficacy of any particular mode (fellowship, research assistantship, etc) is difficult and almost irrelevant. An option was discussed to create federal-university partnerships, where students are offered 5-year packages comprised of federal fellowship support along with institutionally funded research and teaching support for the duration of the graduate degree program. Selected NSF Graduate Research Fellowships were suggested as possible sources of funding for a pilot project.

A final recommendation, or challenge, of the workshop was that in our roles as educators, we need to know more about graduate education. In particular, we need modeling to understand how changes in the costs of graduate education and the availability of labor pools (e.g., foreign students, postdocs) drive behavior of individual faculty and of institutions. Significant research is currently underway to better understand the role that financial support and support structures play in graduate education. Examples are the Carnegie Initiative on the Doctorate and the CGS Ph.D. Completion Project; and NSF has issued a new Request for Proposals to study graduate education as part of the ROLE (Research on Learning and Education) program.

More information, including copies of all presentations, handouts, and transcripts, as well as participant information, can be found at: http://www.ehr.nsf.gov/dge/support_workshop.html

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the further evolution of quality assurance processes will see that consensus lead to the avoidance of bureaucratic excesses, and the assurance and improvement of quality.

¹Quality Review 2003: CHEA Almanac of External Quality Review, Council for Higher Education Accreditation, Washington DC 2003, p. 18

²For example Braskamp and Braskamp contend that a common indicator such as graduation rates may reflect more about institutional enrolment policies than about student learning. Larry A. Braskamp and David C. Braskamp, "The Pendulum Swing of Standards and Evidence", *The CHEA Chronicle*, July 1997, volume 1, No. 5, p. 4

³Quality Review 2003, pp. 3-4

⁴The OCGS By-Laws and Procedures Governing Appraisals are located at <http://www.cou.on.ca/ocgs/HOME/By-laws/BY-LAWSAND-PROCEDURES30Oct2003WWEBVERSION.pdf>

⁵In this case, the Undergraduate Program Review Audit Committee

of the Ontario Council of Academic Vice-Presidents. The UPRAC Review and Audit Guidelines are available at <http://www.cou.on.ca/affiliates/affiliates/UPRAC/UPRACGuidelines2003.pdf>

⁶David D. Dill, "Designing Academic Audit: lessons learned in Europe and Asia," *Quality in Higher Education*, Volume 6 No. 3, November 2000, p. 203

⁷"Student Learning Outcomes Workshop, March 4, 2002", *The CHEA Chronicle* Vol. 5, No. 2, May 2002

⁸"The Value of Accreditation: Four Pivotal Roles", CHEA Letter from the President, May 2003

⁹The Australian Qualifications Framework has guidelines for the Bachelor Degree, the Graduate Certificate, the Graduate Diploma, the Master's Degree and the Doctoral Degree, while the Irish framework has 23 different steps.

¹⁰Quality Assurance Agency Framework for England Scotland, Wales.

Federal Relations Update

by John Yopp, Director of Federal Relations

The government relations activity at CGS has been concerned with both legislative and federal agency issues during the summer interim and since the last issue of the *Communicator*. The time of this writing, during which Congress is in recess until Labor Day, is appropriate for providing a summary of these issues of relevance to graduate education.

On the international graduate student and visiting scholar front, significant activities have occurred with respect to the Student and Exchange Visitor Information System (SEVIS), the U.S.-Visit system, and the Visa Waiver Program.

On June 29, 2004, the U.S. Immigration and Customs Enforcement (ICE) published (www.ice.gov) in a memorandum for all academic institutions and program sponsors the "Final Rule Authorizing the Collection of the Fee Levied on F, J, and M Nonimmigrant Classifications under Public Law No. 104-208." Specifically, all international students who have received SEVIS Form I-20 or DS-2019 with an issuance date of September 1, 2004 or later must pay the SEVIS fee prior to receiving their visas. The purpose of the fee, stated by Congress, is to pay not only for the administration of SEVIS, but the continued operation of the Student and Exchange Visitor Program (SEVP) of ICE. The ICE is the largest investigative division of the Department of Homeland Security (DHS). The fee is \$100 for international students and exchange visitors unless the latter are participating in a federally-sponsored program like summer work, travel, au pair, or camp counselor, which require a \$35 fee.

The higher education associations, including CGS, the American Council on Education (ACE), American Association of Universities (AAU), National Association of State Universities and Land Grant Colleges (NASULGC), NAFSA: Association of International Educators, and the Alliance have communicated concerns over the requirement for payment before the consular decision to grant a visa and the method of payment. Current SEVIS regulations include the options of payment by check through the mail or by credit card via the Internet. Fee payment may also be by a third party in the U.S. or abroad. Because of the concerns of many in the higher education community, regarding the impact of this type and amount of payment on the ability of students from some countries to apply to U.S. institutions, the SEVP stated in its memorandum that it will continue to "explore additional means of payment." These include use of a Western Union "Quick Pay" system and a special Department of State (DOS) Pilot Program in the two largest international student sending countries, China and India. This program, announced in May 2004 by Assistant Secretary of State for Consular Affairs, Maura Hart, would allow the DOS, working with DHS, to collect the SEVIS fee at the time the visa is issued. If implemented, this would address a major concern of the higher education associations. Details are still not worked out.

The ICE also issued on June 30, 2004, a very helpful document that our institutions should be certain is obtained by their international student applicants. It is the FACT SHEET titled "What a Student in Exchange Visitor Can Expect upon Arrival at a U.S. Port of Entry." It includes information on documents that the student must have, how to check for validity of the documents, required contact information for their institution in the U.S., and what to

do after arriving at their place of study. Additional information on this document and other advice is found at <http://educationusa.state.gov/predeparture/travel/customs.htm>.

On the Visa Waiver Program and the major concerns described in the April *Communicator*, the good news is that the Senate approved (July 26 legislation that extends by one year the October 26, 2004 deadline for the 27 visa exempt countries to include biometric identifiers on their passports. This extension had been requested by DHS and DOS). Soon afterwards (August 3), the Border and Transportation Directorate of the DHS issued a notice that the U.S.-VISIT System will implement the exit pilot program for the full 15 air and seaports that have required fingerprints, photographs, or other biometric data of all foreign visitors to the U.S. upon arrival. The implementation of the exit program requiring the same biometric identifiers will allow DHS to determine whether the foreign visitor has properly maintained his or her status while in the U.S. These are the two programs that have led to "reciprocity reactions" from some of the 27 visa exempt countries that have been widely reported in the press.

Congress still retains a major interest in balancing security with an "open doors" visa process post 9/11. On July 21, 2004 Senator Norm Coleman (R-MN) introduced legislation that would greatly streamline the process. In his introduction on the Senate floor, Senator Coleman stated that:

We all know there is absolutely no such thing as an absolute guarantee of absolute security in a free society, so what we do is measure the level of threat against the loss of certain other values and then we try to strike a balance. In the area of student visas, I believe we have pushed security concerns beyond the logical point and need to make adjustments to our policy.

The International Student and Scholar Access Act of 2004 (S.2715) would require the president to consult higher education institutions, international exchange program organizations, and other major stakeholders to create and submit to Congress a strategic plan to Congress that would facilitate and increase international student participation in U.S. higher education. Elements of the plan must include: a means of using the DOS's worldwide educational advising centers to prescreen visa applicants and promote the U.S. educational system; an organizational structure ensuring cooperation of all government agencies involved in the visa screening and granting processes, including a clear delineation of interagency responsibilities; and an effective marketing strategy to promote study in the U.S.

An important provision of the legislation would revise Section 214(b) of the Immigration and Nationality Act that requires international students (non-immigrants) to prove that they don't intend to become immigrants and that they have income and residency in their home country that ensures their return after an approved period of study. This current provision is viewed by many in the international exchange community as one of the greatest single factors for visa denial (see earlier

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Communicator articles).

Finally, the legislation directs the DHS and DOS to study the feasibility of other options for paying the SEVIS fee. This will be an interesting piece of legislation to follow as an indicator of the degree to which Congress sees the balance between maintaining security and providing access to U.S. higher education. The Alliance, an umbrella organization for educational associations concerned with international student and exchange visitor issues that includes CGS, worked with Senator Coleman and his staff on the legislation.

Turning to U.S. graduate educational issues, CGS joined NASULGC, AAU, and other major higher education associations in signing on a letter from ACE's president, David Ward, to Senator Christopher Dodd (D-CT), thanking him for introducing the "Getting Results in Advanced Degrees (GRAD) Act." The GRAD legislation calls for some significant changes to the needs analysis formula and cost of attendance calculations for independent students, a category that includes graduate students. Other changes called for pertain to the Graduate Assistance in Areas of National Need (GAANN) and Jacob Javits Fellowship programs. Both programs are familiar to graduate deans and their continued support is welcome.

Many graduate program administrators remember the elimination of the Patricia Roberts Harris Fellowship Program, which was a program within the Higher Education Act (HEA) created to provide assistance to graduate students from underrepresented groups pursuing terminal degrees. The GRAD legislation proposes the creation of a program of similar doing, the Patsy T. Mink Fellowship. CGS supports these principal components of the GRAD Act with some important reservations that have been communicated to the relevant Senate committees engaged in the HEA reauthorization. These activities will resume in the new Congress.

Another important piece of legislation related to graduate student support is the Higher Education Affordability and Equity Act (H.R. 3414). CGS has worked closely with the Coalition for an Affordable and Accessible Graduate Education on this legislation to restore the tax-exempt treatment of graduate student stipends. Last October, their proposal was introduced into Congress by Rep. Phil English (R-PA) as part of this Act. The Coalition, which is led by the National Association of Graduate and Professional Students (NAGPS) has held a series of Washington advocacy days on this bill, the most recent of which was on June 24-25, 2004.

During these events, graduate students scheduled their own appointments with members of Congress or their staff and conducted their own training sessions on the basics of political engagement and advocacy. As a result of these efforts, H.R. 3412 currently has 37 co-sponsors, even without a Joint Tax Committee cost estimate.

The Coalition provides information to interested graduate education administrators and federal relations officers at <http://www.andrew.cmu.edu/~gsa/gradtax>. The contact person

is Alik Widge, NAGPS Legislative Concerns Chair (lcc@nagps.org).

The most recent federal relations issue to seriously concern the graduate education community and CGS was that of the possible implications of new regulations (April 23, 2004) in the Fair Labor Standards Act (FLSA) to go into effect August 23, 2004. Such implications included, if certain interpretations prevailed, the need to keep records of graduate student hours of employment.

At the request of a number of graduate deans, CGS has been working with NACUBO, NASULGC, AAU, and ACE to obtain legal opinions of these potential implications. The pertinent issue was whether there existed an employment relationship between graduate research assistants and their graduate school. The legal opinion obtained by ACE, with which CGS agrees, states that the Opinion Letter issued on June 28, 1994 by the Department of Labor's (DOL) Wage Hour Administrator is still in force. In this letter the Wage House Administrator states that:

It is our position that in cases where graduate students in a graduate school are engaged in research in the course of obtaining advanced degrees and which research is performed under the supervision of a member of the faculty in a research environment provided by the institution under a grant or contract, we will not assert an employee-employer relationship exists between the students and the school, or between the student and the grantor or contracting agency, even though the student receives a stipend for his or her service under the grant or contract. (W.H. Opinion Letter, 1263)

This opinion has had recent strong support from the National Labor Relations Board (NLRB). In a July 13, 2004 ruling (Brown University, 342 NLRB, No. 42), the NLRB held that graduate assistants at private universities are "primarily students and have a primarily educational, not economic relationship with their university." Effectively this means that they are not considered "employees" under the National Labor Relations Act and can be considered in an "exempted" status as is the current practice.

The ACE opinion letter can be found in its entirety at <http://www.cgsnet.org/pdf/FLSA/pdf>. It is important to note that the 1994 Opinion Letter does specify conditions for this interpretation. CGS co-sponsored a web-cast with NACUBO and CUPA-HR for its members on August 12, 2004 in which the interpretation and the specifications for compliance were discussed in detail by experts. Further information on this issues may be obtained on the CGS website (www.cgsnet.org).

It is somewhat pleasant to end the summer break with such a satisfying outcome.

McNair Memos

Annually, the Council of Graduate Schools and the Council for Opportunity in Education collaborate to create the McNair Senior Scholars Directory. The Directory is a Microsoft Access database of McNair scholars projected to graduate in December or Spring/Summer of the upcoming year. The database includes student names, contact information, undergraduate major and graduate field of interest identified by the GRE taxonomy codes, name of faculty mentor, and undergraduate research area.

The 2004-05 McNair Directory will be available for downloading at the National TRIO Clearinghouse webpage at www.trioclearinghouse.org. You will find the directory listed under the heading "TRIO Programs" and then "McNair Achievement." In addition, there is a link to the McNair Directory on the CGS website (www.cgsnet.org). A letter describing the Directory with the URL location was emailed to all CGS member schools Deans and Associate Deans the first week in September.

The 2004-05 McNair Directory includes 1,700+ student names from over 140 institutions throughout the United States and Puerto Rico. The database serves as a valuable recruitment tool by allowing graduate deans and fellowship programs to directly contact a cohort of highly talented and motivated students. By searching the database by the GRE codes or by state, Deans can directly recruit students interested in a particular area of study or from a particular region. By sorting on area of interest or research area, you can send relevant

names to Department Chairs to share with faculty. Do you have effective practices for using the Directory that you would share with other Deans? Please submit these ideas to Andrea.Reeve@pellinstitute.org.

The Ronald E. McNair Post-Baccalaureate Achievement Program is the single largest federal effort to encourage and prepare low income and first-generation to attend college, and minority students to pursue graduate education. Funded through the U.S. Department of Education's TRIO programs, the McNair Program provides participants with research internships, access to faculty mentors, opportunities to present and publish results of their research, undergraduate teaching experiences, and assistance with applying to and preparing for graduate school.

Please visit the National TRIO Clearinghouse at www.trioclearinghouse.org to download the database; for more information, you may contact Kelley Downs at the National TRIO Clearinghouse, Council for Opportunity in Education (202-638-2887, option 1 or email: kelly.downs@pellinstitute.org).

Kelley Downs, Program Assistant
National TRIO Clearinghouse
Pell Institute for the Study of Opportunity in Higher Education
Council for Opportunity in Education

New Deans and Titles

Jon Butler is Dean of the Graduate School at Yale University. He replaces Peter Salovey.

James N. Crane is Assistant Dean, Office of Graduate Studies.

Luis M. Falcon is Vice Provost of Graduate Education at Northeastern University. He replaces John Cipolla.

Stephen J. Friedman is Dean of the School of Law at Pace University. He replaces David S. Cohen.

Fred Kniss is Interim Dean of the Graduate School at Loyola University of Chicago. He replaces William A. Yost.

Albert Koppes, is Acting Academic Vice President at Loyola Marymount University. He replaces Joseph Jabbara.

Steven L. Kunkel is Interim Dean of the Graduate School at University of Michigan. He replaces Earl Lewis.

Cecile Lindsay is Associate Vice President for Academic Affairs - Graduate and Undergraduate Programs at California State University, Long Beach. She replaces Ron Vogel.

Kim O'Halloran is the Associate Dean of the Graduate School at Montclair State University. She replaces Kristin Cohen.

Marc Pelchat is Dean, Faculty of Graduate Studies at Universite Laval Pavillon Jean-Charles-Bonfant, Bureau. He replaces Michael Audet.

Susan Pfeiffer is Dean of the School of Graduate Studies at the University of Toronto. She replaces Michael Marrus.

Abdul S. Rao is Vice Provost of Research and Dean, College of Graduate Studies at Middle Tennessee State University. He replaces Robert F. Carlton.

Gerry Riposa is Associate Dean for Graduate Studies - Liberal Arts at California State University, Long Beach. He replaces Frank Fata.

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The typical graduate certificate requires 15 or 16 semester credit hours of course work to complete the program. Some institutions require as few as 12 or as many as 18 hours of credit.

Cost of Certificate Programs

Tuition for graduate certificate programs is generally set at the prevailing cost of a graduate degree program. Half of the respondents charge the same tuition for certificate and other graduate degree programs, while only 10% charge a market-rate and 6% set tuition based on regional economic/social priorities.

Distance education, particularly on-line delivery, is a growing aspect of graduate certificate programs. In general, there is no difference in the tuition charged for on-line and campus-based programs. Only 24% of institutions reported that there was a difference, and of those that reported a difference, nearly 80% reported that the on-line program was more expensive. This is one area where public and private institutions reported different practices. Only 33% of private institutions (versus 82% of public) reported that, if there was a tuition differential, on-line was more expensive.

The concern that certificate programs would draw students away from master's-degree programs is not supported by the survey responses (See Table 2). Only 1% of the respondents found a decrease in master's enrollment attributable to graduate certificate programs, while over half reported no change. Interestingly, 38% reported that a number of graduate students went on to enroll in other graduate programs. This is most

likely the result of the ease with which students can transfer credits between certificate and master's programs. Around three-quarters of respondents allow transfer of credit 'sometimes' (25%) or 'always' (53%).

Implications of the Graduate Certificate Survey

Graduate certificates are clearly a growing source of graduate education for many individuals. The success of these programs, much like that of the rising interest in the professional master's degree, stems from the close link between graduate education and workforce needs. Graduate schools that can effectively link their course work with the demand for specific skills and training through graduate certificates can make substantial contributions to local economic needs.

The link between graduate education and the workforce clearly goes beyond certificate programs. CGS is engaging stakeholders in the federal government and Congress, business and industry, and other sectors of the economy to enhance linkages between all aspects of graduate education and the workforce. What we hear from both employers and the graduate

community is the need to bridge doctoral and master's education more creatively and more effectively. For graduate schools, this does not mean diluting the quality of graduate offerings, but rather re-envisioning the relationship between the mission of graduate education to foster discovery and scholarship across all fields and the broader social mission to develop diverse leaders inside and outside the academy for the twenty-first century.

Table 2: Impact of certificate programs on enrollment in master's-degree programs

	Percent reporting
Master's enrollment has decreased	1%
A number of students go on to enroll in graduate programs	38%
No change in master's enrollment	51%

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Jefferson Science Fellowships

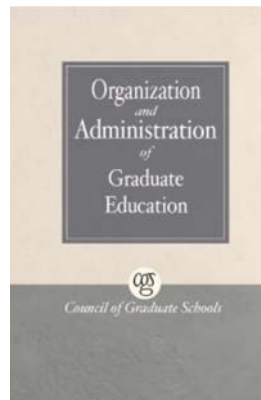
The National Academies is pleased to announce a call for nominations and applications for the 2005 Jefferson Science Fellows program. This program establishes a new model for engaging the American academic science, technology and engineering communities in the formulation and implementation of U.S. foreign policy. Jefferson Science Fellows will spend one year at the U.S. Department of State in Washington, D.C. and may periodically travel to U.S. foreign embassies and/or missions.

Jefferson Science Fellow awards are open to tenured academic scientists, technologists and engineers from U.S. institutions of higher learning. Nominees/applicants must be U.S. citizens and will be required to obtain a security clearance.

Detailed information on the Jefferson Science Fellows program is available on the Web: www.national-academies.org/jsf
The deadline for nominations and applications for the 2005 program year is October 1, 2004.

The Jefferson Science Fellows program is sponsored by the MacArthur Foundation and the Carnegie Corporation.

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This newly revised (2004) booklet provides a comprehensive view of how graduate education is organized and administered in the United States. Graduate schools vary immensely in the ways that they are structured and organized. While recognizing this variety, *Organization and Administration* provides a compendium of common activities and relationships that exist to advance goals that graduate schools share regardless of setting.

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