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**Ethical Challenges
for Graduate Education**

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Ethical Challenges for Graduate Education The Role of the Graduate School ¹

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The issue of how to ensure ethical, socially responsible behavior on the part of researchers is timely . . . even urgent. It is also complex. We saw how difficult it can be in the recent case involving Jesse Gelsinger. Jesse was the 18-year-old who died four days after receiving gene therapy for a rare metabolic disorder as part of an experiment at the University of Pennsylvania. Immediately, many clinical trials were either put on hold or canceled. And as a writer for *Science* recently noted, “Overall, the tragedy forced the research community into a collective soul search . . .” (Gura 2001). The soul-searching, especially among gene therapy researchers, was intensified because this tragedy occurred even though the protocol for the experiment had been approved by the Recombinant DNA Advisory Committee and even though an ethics advisor was working with the research team throughout the research process.

The University of Pennsylvania case demonstrates both the incredible complexity of the issues involved in scientific research today and the vital need to train researchers who will be sensitive to this complexity and to the competing claims of all those involved in a particular research effort.

Our nation’s investment in research is scheduled to top \$90 billion in 2001 for total federal investment in research and development. This investment spans many fields in science and engineering, and the National Institutes of Health budget is scheduled to double by 2003. The size of the public investment and its potential importance to our society place a responsibility on our graduate institutions to make ethics education a higher, more visible priority in the training of future scholars.

Fortunately, the current “rethinking” – sometimes called the “revisioning” or even the “reforming” of graduate education – offers us ample opportunities to take on this challenge.

The context for my discussion of ethics education is the enormous new energy I see invigorating graduate schools and graduate programs around the country. The thread running through the most productive of these discussions goes like this: American graduate education is a huge success story. Its impact is recognized both in the reality of our knowledge-driven economy and by the tremendous strengths of the faculty in our country’s colleges and universities. But perhaps because of this very success and because the expectations are so high, our graduate schools are increasingly exploring ways to further buff this jewel in the crown of American higher education.

Already we can see that one important approach is to stimulate and take advantage of opportunities to work and learn at the interface of disciplines . . . and to pay attention to breadth as well as depth of disciplines.

Another pathway that graduate education has embarked on is preparing students for aspects of their future professional roles that will transcend their disciplines. The challenge in this case is to help them hone such life skills as team building, leadership, and communication – all-important to success in academic as well as non-academic careers. As we support and encourage these exciting new initiatives, finding ways to educate students to think deeply about the ethical underpinnings of their fields becomes one of the most important of these enriching activities.

Graduate faculty have always considered it part of their task to educate their students in the ethics of their fields, but ethics education has not been a generally accepted formal element of curricula. It has been highly individualized – the domain of individual faculty members and departments.

Now, because so many aspects of graduate training are coming to be seen as transcending individual departments and disciplines, the role of the graduate

school in promoting ethics education as a part of students' training has become more compelling. That's why I am suggesting today that, as part of the "quiet revolution" occurring in graduate education, we should work toward the inclusion of ethics education as a key component in that enhanced curriculum.

How should we do this? Answers to this "how" question call for involvement of people like graduate deans. The place to start is with a vision of what we want to accomplish. I believe that to be successful we must have in place a theory of change that addresses two important issues: outcomes and process. Specifically, we must articulate what outcomes we are actually trying to produce through research integrity training programs. Second, we need to examine what process is most likely to result in successful implementation of the change program.

Educational Outcomes

First let's consider the issue of educational outcomes. This topic really challenges us to consider the broader vision of the future we have for the graduate programs and their students. How do we want to make things different and better for students and graduates? What is our vision of change that addresses all stakeholders in the process? This is an important first step. We know from studies of change efforts in an array of organizations that, without a sensible vision, Herculean efforts can easily dissolve into a list of confusing and incompatible projects that lead us in the wrong direction or nowhere at all (Kotter 1995).

My answer to the question, "What outcomes are we trying to produce?" is straightforward. What universities do best is teach students critical thinking skills. In the long run it is that intellectual capital that graduates will trade on to make their professional lives as future faculty, researchers, and leaders. A philosopher colleague of mine, Tom Regan, has defined research ethics as "the process of critically reflecting on ethical questions that researchers face, in their capacity as researchers."

I believe that as we teach students to think critically, our education programs should also strive to improve students' moral reasoning abilities in the context of the disciplines they are studying and the research environments of those disciplines. On one level, students must be exposed to the specific ethical standards associated with their fields. To this end, a well-crafted curriculum should provide knowledge of rules and guidelines such as acceptable standards for acquiring and maintaining research data, the responsibility of authors in collaborative work, and the purposes and practices of peer review.

But the underlying educational purpose of the curriculum should be to prepare researchers to go beyond simple understanding of the rules. They must also know what to do in competing claims situations and to have the strength to do it. When I envision the outcome of ethics training in graduate education, I think about preparing students to be strong in what cognitive developmental psychologist Jim Rest (1986) calls the four components of moral behavior: sensitivity, judgment, motivation, and character. In other words, in my vision, our goal for ethics training in graduate education should be to produce graduate students who are prepared to both understand the ethical terrain of their discipline and have the courage to do the right thing through that understanding.

How can institutions achieve this goal? This takes us to the second component of the change strategy: process. For, while vision of the desired educational outcome is necessary, it is not a sufficient cause for success. Process matters.

Here again I am relying in part on my own personal experience as a graduate dean, but also on my thoughts about how one goes about effecting change more generally in graduate education. In that context I offer five practical rules to guide the process of integrating an ethics component into graduate programs.

Process: Five Practical Rules For Graduate Schools

- I. Designate yourself as a champion in your administration for ethics education.** Ideally, the champion should be a person who comes to the

office most days thinking that research integrity education is an important part of the institution's agenda to be advanced that day. Many graduate deans and associate deans are natural leaders in this effort because their responsibilities transcend individual disciplines and because their mandate is to foster the best practices in graduate education broadly conceived. Many deans also hold the research oversight responsibility on their campuses.

2. **Use your power as dean to reduce the barriers to entry.** Remember that in graduate education good always competes with good for time and priorities. The people who must be involved in a research ethics education initiative have a full agenda already. Faculty are teaching and conducting research – many in an exemplary fashion. Students are taking courses, working as teaching assistants and research assistants, writing dissertations, and working in laboratories. Administrators are developing programs, defending budgets, raising money, and keeping the administrative processes flowing. Because people are already occupied with worthwhile activities, it will be important to create a sense of value and urgency to get this new effort on their agenda.

But more important than urgency to the ultimate success of the ethics education is that it must be designed as an integral part of the curriculum. Institutions will approach this challenge differently. Many institutions have developed or are attempting to develop ethics modules that faculty can either adopt or adapt to integrate into ongoing courses. Other institutions are crafting online courses on a variety of ethics topics. Still others are requiring all students to take a comprehensive course in research ethics. Whatever menu of opportunities graduate schools develop, they must do so with the understanding that faculty generally want to “do good” in this domain. As we craft curriculum, we must make participation attractive to our faculty and students if we are to achieve effective educational outcomes.

3. **Enlist recognized and accomplished research faculty.** Specifically, I suggest that early on you enlist key distinguished faculty across all graduate fields. For example, you will need scientific leaders to articulate the value of

the enterprise to the science community. And you'll need humanities scholars in applied ethics, most typically found in philosophy departments, to ensure the rigor in ethics education that is at the core of a successful activity. A leadership team with strength in both domains will signal that both disciplinary context and disciplined moral reasoning are the hallmarks of a substantive program. It also signals the congruence of excellence in research and scholarship on the one hand and excellence in ethics education on the other.

4. **Lead with an early winner by building on models that you know work.** As a general rule, success breeds success in any organizational change effort. The earlier you can demonstrate success, the quicker you will generate deep support in the community. Often the best way to guarantee success is to build on the successful model of another change effort that the graduate school has undertaken. For example, if you have a highly successful teaching fellows program in which students are given an opportunity to develop their pedagogical skills and work closely with professors as teaching mentors, think about creating a research ethics fellows program using a parallel structure, providing advanced course work in ethics and pairing fellows with professors who actively model best practices in research ethics. If a current program is recognized as working, you can reproduce it with little risk. Build the research ethics education programs on models you know have worked in your own institution.
5. **Take regulation seriously, but remain its master.** As all of you know, last December the Public Health Service issued regulations on training for responsible conduct in research (*Public Health Service Policy on Instruction in Responsible Conduct in Research*). While these guidelines were withdrawn on procedural grounds, they will be reissued. In their current form, the PHS guidelines are specific on the need to do training, and they even provide the content of training. But what we know about how adults grow in capacity to think ethically in their work lives is that active learning matters. The key to the development of ethics education in graduate programs is to ensure that the emphasis is less on memorizing rules and more on engaging content.

Conclusion

Experience tells us that effecting change in a university is more an art than a science (Eckel 1999). Institutional history and context, pressures in the environment, and leadership all contribute to the ultimate success or failure of a change effort. I have talked this afternoon about what I believe works in efforts to advance ethics education in graduate schools, looking at both educational outcomes desired and organizational processes that worked.

At the beginning of my remarks I described a “quiet revolution” that has unfolded in graduate education over the past decade, best summed up as preparing students for the full range of responsibilities they encounter in their work lives. In addition to educating students in the concepts, theories, and methodologies of their disciplines, most of you are engaged as well in preparing your students more broadly for their professional lives. Ethics training, properly conceived, is part of this broader preparation. In that context I suggest that we view the NIH-Public Health Service emphasis on the value of research ethics training as something that reinforces good activities already underway. As we consider alternative strategies to respond to the federal government’s pressure for research ethics training, my final and primary message to you today is this: The opportunity for a broader range of students to receive more focused ethics training is a logical, timely and essential extension of the graduate education and research enterprise. If we are mindful of the quiet revolution already underway in graduate education – and of how it is manifested in each of our own institutions – that revolution can provide a context for achieving a goal that is rightfully demanded of us both by our bankers (funders) and by the broader society in which we work. It also provides one of the prime leadership opportunities for our country’s graduate schools.

Note

1. This text is based on a talk given initially at the Conference of the Office of Research Integrity, November 19, 2000, Bethesda, MD, and revised for the MAGS meeting of April 18, 2001.

References

- Eckel, P., M. Green, B. Hill, and W. Mallon. 1999. *Taking Charge of Change: A Primer for Colleges and Universities*. Occasional Paper Series. Washington, D.C.: American Council on Education.
- Gura, T. 2001. After a Setback, Gene Therapy Progresses . . . *Gingerly*. *Science* 291:1692-1697.
- Kotter, J. P. 1995. Leading Change: Why Transformation Efforts Fail. *Harvard Business Review* (March/April): 59-67.
- Rest, J. R. 1986. *Moral Development*. New York: Praeger.

Credentials vs. Education

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You've heard the adage: "Be careful what you wish for." I guess I did not heed it properly.

Last summer, during the planning meeting for the Fifty-Seventh Annual Meeting of MAGS (April 2001) we had agreed to the theme of "ethics in graduate education." I asked that we include a speaker who would address the ethical dilemma that results because some students seek a graduate credential but not the education that it is intended to represent. My fellow committee members agreed that the topic was important, but we did not agree on the speaker. They suggested me; I suggested anyone but me. They had the majority of votes, and so I stand before you today to share some observations – some are my own, some are garnered from colleagues and students, and some I have read about. I hope to challenge you to think about these issues because I truly believe they are both important and more commonplace than we would like to believe.

I think you will agree that those working in graduate education – faculty and administrators – start with the assumption that our mission is to facilitate our students' education. We want to help students master their subject matter, learn to be good critical thinkers, approach problems analytically, and develop skills for lifelong learning. We want to inspire them to be strong scholars, well grounded practitioners, and solid researchers. While I think we are in agreement with these goals, it occurred to me one day that we are naive if we think that all of our students share our objectives.

Some graduate students only want the credential – a graduate certificate or degree – which they see as a ticket to a better paying job, higher status, or the fulfillment of a lifelong dream. Unfortunately, in some cases they are unable or unwilling to obtain the education that is represented by the credential. In all likelihood, this is more common among master's students than doctoral students, but it is also true for some doctoral students. It is also more likely to be true of the part-time adult learner than it is for the full-time graduate student.

What are some of the examples I have seen and heard that have led me to become concerned? A couple of years ago, I heard a conference speaker proudly read a letter received by her university from a midcareer professional, a woman seeking a master's degree. The student worked full-time, had a family, and was traveling with her family on vacation while she was simultaneously taking graduate courses. While her husband and children slept in their shared hotel room, the woman/student was under the bed, studying by flashlight.

A true story? I can't be certain, but if it is true, then I wasn't sure whether I admired the student for her determination or whether I was horrified by her choice of study methods. Can one really become engrossed in her studies, focus on what she is learning, and reflect on the subject matter when studying is done in brief snatches, under a bed, with light provided by flashlight? Maybe, maybe not.

Similarly, I repeatedly hear about adult learners who are full-time professionals, perhaps with a family, who squeeze in ten minutes of study here and ten minutes there and consider it pursuing a graduate education. I find myself wondering if I am old-fashioned in my ideas about how people learn, about the importance of graduate students becoming immersed in the subject matter. What about the idea that students should spend several hours studying for every hour in class? Ten minutes here, ten minutes there. Do they add up to the investment of time that is necessary for a graduate education? In the case of studying, I would argue that the whole is **less than** the sum of the parts.

Some midcareer professionals are able to complete a master's degree in 18 months while working full time in demanding careers. Are these super people, or is the nature of the graduate degree different from what it once was? Does a master's degree simply mean something different when we are talking about a professional master's degree compared to a traditional one? What about doctoral education? Do the professional doctoral degrees – Ed.D., for example – reflect less input and/or less mastery on the part of the learner?

An attractive course format for the working professional is the compressed course, one that is offered intensively for a shorter period of time than the course is normally taught. I have no doubt that compressed courses can be excellent courses, opportunities for students to immerse themselves in a single subject. At the same time, should we allow all courses to be taught in compressed formats? Do some subjects require time simply for reflection and/or incubation, time that is not provided with a compressed course? Is there a limit to how much compression is possible before the quality suffers? Can a three-credit graduate course be taught in a single week? (It is currently being done at some universities.) Should universities impose a limit on how much of a graduate program can be taught in compressed format?

For several years, I have heard about students who “subcontract” some of their graduate work. What do I mean by this? One example of subcontracting is seen when students hire editors to assist with their writing. Is this acceptable? After all, when professors write books, they are assigned editors who polish some of the writing. My concern, however, is not with the student who hires an editor to add a few commas, change “which” to “that,” and fix a dangling modifier. I become concerned when the student is unable to communicate clearly in writing, and the editor's role is so pivotal that the final product reflects as much about the editor's ideas as it does about the student's. If editors are allowable, how does one know the extent to which the product reflects the work of the student or the work of the editor?

Editors are not the only subcontractors hired by some graduate students. They also hire methodologists to “assist with” research design and data analysis. If this

is allowed, then how do we know the research skills of the student? At least some graduate degrees are intended to confirm that the graduate is competent in research methodology. When that is the case, it is imperative that the student complete his or her own work. The degree is being awarded to the student, not to the consultant.

My view on subcontracting is not, however, the only perspective on this topic. Some faculty argue that students who subcontract their work are demonstrating a valuable and important skill: the skill to access appropriate consultation and assistance.

Plagiarism appears to be an increasing problem in higher education. A recent list-serv posting indicated that one university found plagiarism in 25 percent of the written products of its undergraduate students. I am not aware of a comparable study at the graduate level, but I would hypothesize that the frequency is less yet still very high. I recently heard of an incident in which two graduate students turned in almost identical papers, leading the professor to conclude that one had copied the paper of the other student. This was not the case, however. Rather, it was learned that both graduate students had plagiarized from the same published article.

The web with its vast resources, easily available for “cut ‘n paste,” makes plagiarism easier and more tempting than ever before. Additionally, the limited time available for the working professional or the busy graduate assistant makes plagiarism attractive to some and fits well with our fast-paced society that provides little encouragement for reflection and analysis of ideas. Do we, as graduate deans, need to be concerned?

I have shared with you some observations that have led me to become concerned about the goals of some of our graduate students, but I am not an expert in this area. As a result, I asked others in higher education – students, faculty, and administrators – what they thought about these matters. This was not a systematic study, but I heard some interesting views.

To some I posed the question: **Are students interested in an education or just in getting a credential?** A doctoral student at an Ivy League university completely misunderstood my concern, saying, “Lots of people are in graduate school because they like school and they don’t much like what they see in the work world. They are not interested in the credential except insofar as they need it to get a job in higher education.” He dismissed the credential as being unimportant, seeing it as a necessary prerequisite for the professoriate. His interest was in the education. It would be nice to find that his view predominates among graduate students, and I expect that it does among a certain subset of them.

In response to my nonscientific study, a faculty member – perhaps a cynical one – said, “All people are basically the same. They will get away with whatever they can get away with because in this busy culture there is always something waiting to take the time and place of something else.” This particular faculty member apparently believes that her students are interested in the credential and have little investment in obtaining an education. The speaker excused the attitude, however, as being part of “human nature.”

A well recognized, national leader in higher education indicated that students, at both the undergraduate and graduate levels, know what they need to learn. He argued that they should be allowed to determine what is included in their academic programs, and they should be required to complete only what they determine is important. This leader has a very positive – but perhaps naive – view of students and their commitment to learn what they need to know.

My nonscientific study also produced a variety of **explanations for why students would focus more on obtaining the credential than the education.** Again, I suspect these comments apply more often to master’s students than to doctoral students and more often to part-time students than to full-time ones.

Learning and thinking are hard work that take considerable time and energy, resources that are often in short supply, particularly for the part-time adult learner. That is why the student is part-time! Furthermore, the amount of time

and energy to be invested is not equal across all people. Those who have been out of school for quite a while and those who are not well-prepared may have to invest more to achieve at the level of their peers. But these students might be the ones who have the least time and energy to invest in their education.

Adult learners are a growing segment in graduate education. They are generally part-time students and full-time employees, often with a family that requires an investment of time. “They have lots of balls to juggle,” said one faculty member who worked exclusively with this type of student. The faculty member went on to say that most of these students find the idea of learning compelling and **intend** to work for their degrees. But, reality sinks in as they try to combine their academic responsibilities with an already full life. Good intentions conflict with this reality. The student grows weary, especially if he or she fails to see any relevance in what is to be learned. Sometimes looking for an easy route to the degree is the only hope of getting one.

Reports appearing in the media, and even those from educators and educational associations, repeatedly show that higher earnings are associated with higher degrees. On average, those with master’s degrees earn more than those with bachelor’s degrees, and those with doctoral degrees earn even more. The focus is on the degree, not the education. Does this tell the public that it is the credential, the degree, that is a ticket to a higher paycheck? Should the message be changed to focus on education not degrees?

Employers often advertise for someone with a master’s degree without requiring that it be earned in a particular discipline. This emphasizes the importance of the credential and de-emphasizes the learning that the degree represents.

Some experienced professionals seeking advanced degrees feel they already have the knowledge and education they need; they simply lack the credential. For example, a very experienced master’s-level clinical psychologist or social worker who returns for a doctoral degree knows a great deal when starting the graduate program. According to faculty who have worked with this type of student, they can be very resistant to learning anything that conflicts with what they already

“know.” In some cases, they simply want (need?) the credential to be fully licensed in a particular state.

An economist responded to my initial question by providing a simple economic model in which students seek to maximize their investments by maximizing “benefits” and minimizing “cost.” A psychologist explained student behavior in terms of “reward” and “punishment” and posited that a student’s behavior – whether it emphasizes the education or the credential – can be rationally explained.

How do we as educators respond if there is a striking divergence in the basic goals of the institution and the basic goals of the student? The place to begin is before an individual becomes a student. From the moment a prospective student expresses interest in a program, the individual must be given a realistic view of what is expected of a graduate student. Universities give accurate estimates of the financial cost of an education; the same approach must be taken for the other investments a student must make. In today’s world where there is considerable competition for graduate students in certain programs – particularly professional master’s programs – one must avoid the temptation to attract students by understating the demands of the program. Prospective students should be told accurately how much time and energy are required to complete the program.

Those who are not prepared to make the necessary investment should not be accepted. It is important to note that this may solve the problem for your school or for mine, but it will not solve this issue from a societal point of view. An individual committed to obtaining a graduate degree – at least at the master’s level – can generally find a way to obtain that graduate degree. I recently learned about an accredited institution that accepts students into a master’s program with a bachelor’s degree and one year of experience *or* with five years of experience and no bachelor’s degree. I know of another accredited institution that selectively transcripts undergraduate credits earned elsewhere to create a new undergraduate transcript with a higher GPA than the original ones. In other

words, there are institutions whose ethics are questionable, but that is a subject for a different presentation!

Faculty with whom I discussed the challenge of a divergence between institutional and individual goals repeatedly told me that it is the role of the faculty to move students from a commitment to the credential to a commitment to learning. As one faculty member stated, “Imagine the incredible joy and growth of a student who starts out looking for an easy way to a credential and ends up discovering the joy of true learning.” For the many students who start out with a commitment to learning and education, the faculty play an important role in helping them realize their original goals. This is particularly true for part-time adult learners besieged with demands on their time. When I questioned a faculty member on how to do this, she observed that this is the gift of the truly outstanding teacher.

When working with adult learners, the faculty must begin by acknowledging that the student already knows much but needs to learn more. The students’ views must be respected, but the students must also accept that their ideas will be challenged. This is part of learning. Helping the graduate student who is an experienced professional accept new ideas and grow educationally can be very challenging. Again, this is a challenge that is met by the outstanding teacher.

What can we expect in the future? Having talked about some of the issues surrounding what I call the “credentials vs. education challenge,” let me explain why I believe this issue should be of increasing concern to us and why I initially suggested this topic to the MAGS planning committee. I am concerned that we are seeing and will continue to see increasing numbers of students who want a graduate degree or certificate but who do not want to invest what is needed to obtain the education represented by the credential. At the same time, I see an increasing number of institutions – even accredited ones – willing to oblige these students, and I wonder how this will affect the meaning of the degrees awarded.

Some of my pessimism is based on the *Higher Education Research Institute’s* annual survey of college freshman. In a report of data gathered in 1999, Sax et al. (1999)

found that “today’s college freshmen appear to be more academically ‘disengaged’ than ever before.” The authors report record high levels of students who report feeling frequently “bored in class,” students who “came late to class” frequently or occasionally, and ones who “overslept and missed class or an appointment.” The report stated, “Academic disengagement is also reflected in the record low number of freshmen who report studying or doing homework six or more hours **per week** during their last year in high school.” And finally, “currently 40.2 percent of students study less than three hours per week, and 17.1 percent study less than one hour per week” in college. We can expect that a portion of these academically disengaged students will be our future graduate students. How will they approach graduate education?

I am also concerned about how society’s emphasis on “speed” and “multi-tasking” will affect the educational process. I still believe that learning requires time for reflection and exploration. High speed computers can facilitate the work of a student, but in the final analysis thinking, learning, and understanding all require an investment of time. Will graduate students of the future be prepared to make the necessary investment or will they expect learning to be analogous to “instant messaging”?

What are the implications of these issues for the meaning of graduate degrees now and in the future? At one time, a high school degree was an indication of meaningful learning. Now, those graduating from high school may need remedial courses to prepare for college. The meaning of a high school diploma has clearly changed, and the credential is no longer sufficient for securing a “good job.” Is this because the degree is so prevalent, or is it because the degree no longer confirms that one has achieved a particular level of competence? Is the meaning of a college degree also undergoing significant change? What does a bachelor’s degree signify today? Is the meaning of the master’s degree going to change? Has it already? Finally, what about the meaning of the doctoral degree, particularly the Ph.D.? Should we, as graduate deans, be concerned?

I want to emphasize that I do not believe that all students are interested only in credentials. My question to you is whether we should be concerned about those who – due to lack of time or money or commitment or whatever – seem more interested in obtaining the credential than in obtaining the education that the credential purports to represent. And if we should be concerned, what responsibility do we have for addressing this issue?

References

- Sax, L. J., A. W. Astin, W. S. Korn, and K. Mahoney. 1999. *The American Freshman: National Norms for Fall 1999*. Los Angeles: Higher Education Research Institute. Retrieved Executive Summary on November 18, 2000, from UCLA, Higher Education Research Institute website: <http://www.gseis.ucla.edu/heri/heri.html>.

Graduate Education: Exploitation or Opportunity

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Abstract

Graduate education provides opportunities for intellectual growth, professional development, and advancement of knowledge. To successfully exploit these opportunities, graduate students need accurate information about career prospects. The research community is helping to provide that information and recently has proposed several important recommendations to improve the graduate and postdoctoral experiences. The Federation of American Societies for Experimental Biology (FASEB) supports higher stipends, improved benefits, and efforts to reduce the duration of graduate and postdoctoral training.

Introduction

As part of the leadership for the Federation of American Societies for Experimental Biology (FASEB), we would like to personally thank you for the opportunity to comment on graduate education. FASEB is comprised of 21 societies with more than 60,000 members, making it the largest coalition of biomedical research associations in the United States. Our mission is to enhance the ability

of biomedical and life scientists to improve, through their research, the quality of life for all people.

As professionals, we look back on our own graduate educations as wonderful experiences. It was a time of great personal growth and exploration. Graduate education was an opportunity to advance our education in our chosen fields and to explore myriad options for careers in research while at the same time contributing to the advancement of knowledge.

Unlike many of our fellow students who went into professional programs, we knew that there was considerable risk involved in our chosen career paths. Not all of the graduate students in our cohort could or would become successful researchers. But given the excitement, promise, and challenge of a research career – along with the minimal cost – we decided to take a chance. It was a choice that we never regret having made.

Recent Studies

There has been a long history of scientists examining the trends and outcomes of graduate education. Many of these studies were conducted by the National Academy of Sciences, and they document the research communities' concern about the education of the next generation of scientists. This tradition lives on, and we would like to comment on a few of the more recent examples of this work.

In 1997, FASEB invited representatives of its member societies and interested participants from the education community to a consensus conference in Bethesda, Maryland, on graduate education. Susan Gerbi, Ph.D., of Brown University was the chair of the meeting. Under Dr. Gerbi's guidance, the society representatives reviewed studies of graduate education, heard from distinguished speakers, and reviewed survey data on the career outcomes for recent biomedical science Ph.D.s.

The *Graduate Education Consensus Conference Report* (FASEB 1997) concluded that major changes were taking place in the labor market. Recent graduates were spending more time in postdoctoral training. There had been minimal growth in academic jobs while opportunities were growing in industry. Overall, unemployment was quite low.

In response to this situation, FASEB concluded that it would be unwise to initiate any external, national regulation of biomedical Ph.D. programs. Changes in the labor market needed to be acknowledged, but it would not be in the nation's interest to dismantle such an exemplary education system on the basis of the short-term trends observed in the study. What was needed, therefore, was better information on career opportunities.

At about the same time, the National Research Council (NRC) Committee on Dimensions, Causes, and Implications of Recent Trends in the Careers of Life Scientists (1998) published its report, *Trends in Early Careers*. While based on the same National Science Foundation surveys, this report focused only on academic employment for a much broader population (all life sciences) and included fields outside of biomedicine such as ecology, botany, zoology, general biology, etc. Its conclusions were much less optimistic. Untouched by the revolution in biotechnology, employment opportunities in many of these fields were much poorer than those in the biomedical fields. Moreover, the data used by the NRC (and FASEB) were collected in 1995, a period of uncertainty for the research programs of the National Institutes of Health (NIH). Subsequently, we have seen three years of double-digit growth for NIH and the rising expectation that its budget would double in five years.

One important limitation of both the 1997 FASEB study and the NRC study was the focus on an aggregate population of scientists. Neither study was able to consider variations across subfields. This was unfortunate because there were persistent reports of shortages in some areas.

A recent analysis of career opportunities in immunology (Garrison and Kincade 2001) found that the growth in new immunology Ph.D.s was much slower than

that for all life scientists. The number of new immunologists, however, still exceeded the number of new academic jobs. At the same time, research funding for immunology was growing substantially, suggesting a trend toward larger labs. In response to this, the authors suggested that scientists examine ways to change the career ladder to provide more and better jobs for research scientists without faculty positions.

Recommendations

In addition to career outcomes, FASEB has been extremely concerned about the salaries and benefits of graduate students and postdoctoral scientists. In recent years, FASEB's recommendations to Congress have called for a substantial increase in the base salaries of trainees supported by the National Research Service Award (NRSA) training and fellowship program (FASEB 2001). FASEB is committed to working for higher stipends and improved benefits for graduate students and postdocs and will be making this a significant part of our advocacy program.

The postdoctoral training experience continues to be an integral part of career development in the biomedical sciences. While it is reported to be an enjoyable and rewarding experience by most trainees, a number of areas for improvement were recently targeted in *Enhancing The Postdoctoral Experience for Scientists and Engineers*, a report published by the NRC's Committee on Science, Engineering and Public Policy (COSEPUP 2001). FASEB applauds this effort and believes several key points merit particular emphasis. Improvements in postdoctoral training are needed to keep careers in biomedical research attractive and desirable.

Despite recent increases in the salary scale used by NIH-supported training programs, compensation for postdoctoral fellows is still too low in most research institutions. Higher stipends are needed, and geographical adjustments for differential cost of living should be considered. Health care and other fringe benefits should be consistent with those available to other staff.

A clear distinction should exist between postdoctoral fellows who are in the process of being trained and other valuable research workers. Scientists with more than five years of accumulated postdoctoral research experience should have different designations and well-delineated statuses.

Although there is substantial demand for well-trained experimentalists, only a few will head independent laboratories in tenure-track positions. Trainees should be made aware of career options as early as possible and given placement assistance.

Support for trainees need not be limited to formal training grants and should not exclude individuals who are not permanent U.S. residents. An equally rich experience should be provided to all trainees, regardless of the source of stipends, using the mentoring practices recommended in the COSEPUP report.

Last year, the NRC's Committee on National Needs for Biomedical and Behavioral Scientists (2000) published a report on the NRSA training and fellowship program. Recently, NIH issued a response to the NRC report, commenting on the NRC recommendations to reduce the number of new Ph.D.s, reduce the number of graduate students supported on research grants, and raise the stipends of graduate students and postdoctoral scientists (NIH 2001). NIH stated that, "While the NIH agrees that there is no rationale for growth in the number of Ph.D.s in the basic biomedical sciences, we are less convinced of the need to take any specific steps to curtail the entry of students into science." FASEB found the NIH statement compelling and supports the NIH position.

In a thoughtful statement, NIH clarifies what it can do to influence training of biomedical researchers. Training grants serve one purpose and research grants another. We agree with the NIH position that training grants should not be used to limit the number of students studying science. Ongoing initiatives designed to recruit underrepresented minorities are noted. The NIH also declares a determination to accurately track training that occurs under support from research grants as well as trends in workforce needs. FASEB is in complete agreement on all of these points.

While only a small percentage of trainees are supported under formal NIH programs, NRSA policy has a substantial influence on compensation and mentoring standards in the United States. FASEB agrees with NIH and NRC that stipends for graduate students and especially postdoctoral fellows are too low and applauds the increases now being adopted. The reluctance of NIH to restrict the employment of students on research grants is also commendable. However, effective mechanisms for creating improved training environments could be brought to the attention of principal investigators training graduate students on research projects. A set of "best practices" for mentoring graduate students comparable to the NRC guide, *Enhancing the Postdoctoral Experience* (COSEPUP, 2000), might be developed. Both NIH and FASEB agree that research institutions should strive to constrain the *duration* of graduate and postdoctoral training, limiting the former to six years and the latter to five years.

More active dialog should be established between NIH and organizations that periodically study trends in scientific training and workforce needs. The proposal to link NIH databases with others has to be helpful. However, there are some indices that should be tracked and publicized by NIH itself. For example, percentages of trainees and grant recipients that are female or underrepresented minorities should be readily available on NIH websites. Numbers of current and past principal investigators, i.e., scientists with RO1 equivalent grants, should be closely monitored and publicized. NIH and NSF should collaborate in an effort to understand field-specific employment opportunities and workforce needs in industry as well as academia.

FASEB is in complete agreement with NIH about the importance of foreign scientists to U.S. biomedical research. Indeed, our country has become increasingly dependent on them in many areas, and the long-range consequences of raising barriers to foreign students and scientists should be carefully considered. Non-permanent residents are currently excluded from formal NIH training programs, and the appropriateness of that policy might be reexamined.

By proposing limits to the duration of training, NIH acknowledges an important issue. Growth in numbers of postdoctoral fellows results in part from misclas-

sification of research workers as trainees. Staff scientists should be accorded the status appropriate to their experience and importance to research programs. Regular assessment of progress toward career goals is essential for those who are formally being trained. The recommended changes should make careers in biomedical research even more attractive at a time when prospects for scientific advances are exceptionally bright. We are delighted that NIH has publicly committed to further enhancing the educational and training opportunities of graduate students and postdoctoral fellows.

Agenda for the Future

FASEB maintains an active and on-going interest in graduate education. Our Science Policy Committee has a subcommittee on Training and Career Opportunities, and they will be considering initiatives in several areas. In the months ahead, their activities will include promoting science education, distinguishing staff scientists from postdoctoral trainees, identifying ways to expand and enhance career opportunities, conducting research on compensation for postdoctoral trainees, and finding ways to help scientists enter appropriate career tracks at earlier stages in their careers.

References

- Committee on Dimensions, Causes, and Implications of Recent Trends in the Careers of Life Scientists. 1998. *Trends in the Early Careers of Life Scientists*. Washington, D.C., National Academy Press.
- Committee on National Needs for Biomedical and Behavioral Scientists. 2000. *Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists*. Washington, D.C., National Academy Press.
- Committee on Science, Engineering and Public Policy. 2000. *Enhancing The Postdoctoral Experience for Scientists and Engineers*. Washington, D.C., National Academy Press.
- Federation of American Societies for Experimental Biology. 2001. *Federal Funding for Biomedical and Related Life Sciences Research: FY 2002*. Bethesda, MD: FASEB.
- Federation of American Societies for Experimental Biology. 1997. *Graduate Education Consensus Conference Report*. Bethesda, MD: FASEB.
- Garrison, H. H., and P. W. Kincade. 2001. Careers in Immunology: The New Reality. *Nature Immunology* 2 (1).
- National Institutes of Health. 2001. NIH website: http://grants.nih.gov/training/nas_report/NIHResponse.htm
- Brannon, P. M. 2001. Serving the Needs of Postdoctoral Scientists. *FASEB News* 34 (2): 2.

Exploitation vs. Opportunity: A Faculty Member's Perspective

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Introduction

Let me start by making clear what place I understand myself to be filling on this panel. I'm not here to give the faculty perspective on the exploitation or otherwise of graduate students. I'm here to discuss the exploitation or opportunity experienced by faculty members who are in my kind of position – i.e., nonregular, teaching-oriented positions within research institutions. Also, being in the humanities, my concern is entirely with those who are or are not being exploited for their teaching. It is just about unheard of for someone to be economically exploited for their research in the humanities. It's perhaps not immediately obvious how my position pertains to graduate education, but I'm planning to make something of a case for a new model for regular faculty positions. If this model were to be broadly adopted, it could not help but affect our attitudes about graduate education as a preparation for academic careers.

Throughout the country, university administrations assessing future personnel policies have recently taken up the issue of a division in regular faculty between those with a research orientation and those with a primary commitment to teaching. We all know the traditional model very well. Regular faculty are supposed to partition their time equally between research and teaching, but research is the primary assessment when it comes to promotions and tenure as well as merit raises. On the traditional model, faculty who are hired primarily or entirely for teaching are *nonregular* - they are adjunct professors or temporary hires, they bear titles like *instructor* or *lecturer*, and they are certainly not in line for promotions or merit raises, let alone tenure. Such teachers are contracted to work a year, a semester, or even a course at a time.

I think this model comes to us from the smaller private institutions designed to be communities of scholars – and it works very well for them. The core of the curriculum can be covered by a modest body of faculty teaching two or three small classes a term and finding plenty of time for research. Shortfalls in staffing can be dealt with by occasionally bringing in outside assistance. But it's not clear that the model works well for a larger institution – especially a state institution – with a multidimensional mission. The cost of keeping a faculty that is at least 50 percent devoted to research means that state institutions especially cannot afford to staff all their courses with regular faculty. Instead, more and more courses are being staffed by the nonregular underclass of adjuncts, part-timers, and lecturers.

It seems to be time to take more seriously the idea that a significant portion of the regular faculty in an institution should be appointed with a primary focus on teaching. They should be full-time faculty with all the benefits and privileges of research faculty and with prospects for promotion and genuine salary improvement assessed primarily on the basis of teaching performance. At the end of my contribution, I'll offer some remarks on a couple of the most pressing issues this proposal raises, especially for graduate education.

First, let me tell you something about my own experience. I'm a full-time lecturer in philosophy at the University of Missouri – St. Louis. This means that I am contracted to work 80 percent of full-time on teaching duties, which adds up to four courses per semester along with the usual advising. The other 20 percent is service. There's *officially* no research requirement. I'm finishing up my second year in this position, and I have a contract for next year on the same terms. In fact, if I wanted it, I suspect that I could continue in this role indefinitely. I have a colleague who has been a full-time lecturer in the department for more than twenty years. Actually, he's now a senior lecturer. I'm not paid particularly well. Last year we hired two new Ph.D.s to tenure-track positions fresh out of graduate school. Their starting salaries are about one and a half times what I earn. However, I'm lucky enough to have a chair and a dean who are strongly committed to improving my situation.

What Opportunity?

For me, it's fairly obvious what it is about this situation that can be accounted an opportunity. In effect, I'm already in the kind of position that I'd like to promote. Although the University of Missouri officially accounts me nonregular, I am nevertheless treated by my colleagues, chair, and dean as if I were a regular faculty member. I'm afforded a full voice in the department, I have all the benefits and voting rights of regular faculty, and so on. What's more, I have none of the pressures of research that my junior colleagues suffer under. For what it's worth, I'll add that I came to this position from a tenure-track position at another university. In fact, I've been all around the block. I was a graduate assistant at the University of Massachusetts; I was an adjunct, hired for a course at a time at \$1500 per course at the University of Hartford; I was a visiting lecturer – my first real job – at Dartmouth for a year. That was still paid by the course, but in 1990 they paid \$5000 a course. I can't imagine what they pay now! I made a lot of money in 1990-91! Then, for what ended up being eight years, I was tenure-track at SIU-Carbondale in a mostly supportive department, teaching two courses a semester.

That probably sounds like a dream career track to most new Ph.D.s struggling to make their way in the academic world. But, like so many young academics, the research component came hardest. I managed to crank out a few papers and get published in good journals, but there's something soul-destroying about it. We almost all agree that there's far too much scholarly literature and that, with very few exceptions, each paper is read by only a very tiny minority. I was recently invited to write a paper for a major collection of essays on Leibniz, coming out through OUP. I toiled over the project for a year. A couple of weeks ago I finally had to tell the editors that I've really nothing genuinely worth saying on Leibniz. It's agonizing to see that opportunity pass by – a guaranteed publication in a distinguished volume. Some people would die for such an opportunity. But why? What's it all for?

I find the intellectual life most fulfilling when I can figure out how to make, say, the philosophy of Leibniz accessible to my students. Frankly that's when I learn

most. So in leaving the prospect of a tough tenure battle at Carbondale for barely two-thirds the pay and twice the teaching load, what I've gained is the opportunity to commit myself to teaching development full-time, without the sword of Damocles hanging over my head. Of course, I've also gotten out of the tenure battle. That was a major part of the motivation, and it raises a significant question about job security and assessment for the kind of position I would like to promote. I'll readdress that question shortly.

In sum, I regard my position as a great opportunity to do the kind of job I want to do without the pressure of artificial constraints. Yet some of my senior colleagues can't help expressing distress at what they regard as my plight. They think (rightly) that I'm grossly underpaid and overworked. They can't imagine how I feed my family, and they certainly can't imagine how I can put together nine lesson plans for four courses each week. They think (and I'm happy to count my chair among them) that I am seriously exploited by the university.

What Exploitation?

I think the simple story is this. We academics put a very high premium on our product. We do something very few people can do. We go through a long and grueling training to do it. And the end result is a very special skill – in fact, more of an art. We are a blend of professionals and artists whose work should be highly valued. It is not like flipping hamburgers, nor even like plumbing or fixing cars, and it should be paid accordingly.

There are other considerations. In principle, I have none of the job security of my colleagues (though I'm sure I feel more secure than the junior research faculty right now!). I'm called on to fill teaching needs much more than I would prefer, and the university gets a very good deal. For not much more than half the average pay of the regular faculty (senior as well as junior), it gets twice the number of classes, and it gets them taught by someone with a Ph.D. and a modest though respectable research background – a real academic, in other words.

I think there's a perception that if the university is getting such a good deal, someone must be losing out, and it must be me. Well, I'm not paid enough – that's for sure! But I get the impression that, in my case at least, the administration I'm working with is committed to changing that. UMSL has embraced the idea that some of its permanent faculty are teaching faculty with a great deal to offer the university. There are lecturers serving in important positions in the administration and chairing core university committees. There are lecturers who are leading the way in the university's adoption of new classroom technologies. The university is beginning to respond by working to make the conditions of these people more satisfactory.

There are still some problems. There is little scope for promotion (although, as I mentioned, there is a senior lecturer rank) and, most notably, no serious prospect for advancement by promotion to the ranks of the tenurable. This is ostensibly because of a technicality. Any new regular faculty position is subject to an open and competitive search, and a regular faculty member can be promoted into a more senior position on the regular faculty. Since lecturers are officially nonregular faculty, however, they can only advance into the regular faculty by entering into this open competition.

There's something not quite right about this. At UMSL, the official distinction between regular and nonregular faculty is exactly the distinction between research and nonresearch faculty. But I've suggested that many among the nonresearch faculty play just as important a role in the university as the research faculty do, and the university is happy to treat its permanent lecturers as equal partners with research faculty in the running of the institution. To call the permanent lecturers *nonregular* is simply a holdover from the traditional model – the community of scholars and the occasional adjuncts from outside. That model really doesn't apply to the modern state institution.

Whither Lecturers?

It seems to me to make obvious good sense for a large state institution with a diverse mission to employ regular, full-time, permanent faculty in a diversity of roles. Why would anyone object to this? Here are some questions that people have tended to ask:

- Do teaching faculty expect to be paid as much as research faculty?
- If not, won't such a division of the faculty generate a class system?
- What criteria can we use to evaluate teaching-only faculty?
- What about tenure?
- What happens to the high premium we put on having college classes taught by genuine scholars?
- Doesn't this model mean that we will have to change our approach to graduate education?

Let me briefly comment on these questions.

Do teaching faculty expect to be paid as much as research faculty and, if not, won't such a division of the faculty generate a class system?

There's no doubt that we're going to have to place more value on teaching than we have in the past. I can't see any reason why a really good college teacher shouldn't make at least as much money as a good junior professor in a research position. I don't think it's likely that teaching-only faculty will garner the kind of super-salaries that we see for top academic researchers these days, but there's neither an economic nor a merit-based reason for a substantial disparity in base pay. Each of us, when we chose the academic life, chose a path that we knew would be less well rewarded than many that were open to us. Does this make us all feel like second-class citizens? That hasn't been my impression. Perhaps I've been lucky, but my research colleagues certainly don't give the impression of regarding me from a lofty height. In part, I think, we can get a clearer perspective on these issues if we can see a way forward on the next pair of questions.

What criteria can we use to evaluate teaching-only faculty? What about tenure? The first question is increasingly pressing even if we stick with the traditional model in which the large majority of regular faculty partition their time between teaching and research. In state institutions, in particular, our paymasters are not going to allow us to continue privileging research over teaching when it comes to our self-evaluation. All of us are aware of the inadequacies of complete dependence on student evaluations. But what other tools of evaluation do we have?

Part of the answer is that we should be looking not just to evaluate the finished product, but to give recognition and account merit for work in teaching development. What development opportunities have been pursued in the form of grants and seminars? What innovative course methods have been developed? What role has a teacher played in curriculum development and academic policy? All of these things add up to a serious contribution to the mission of the institution. They should be part of the basis of our assessment of teaching success along with traditional classroom evaluation by peers and students. The teacher who rests on the rewards of traditional classroom success may not be as meritorious as the less heralded teacher who helps to develop the mission of the university.

So what about tenure? This may, of course, end up an anachronistic question. Old-style tenure is on the way out, for better or worse. Personally, I'm happier to be in a position where I can have reasonable confidence that if I do my job as well as I can, it will continue to be mine. Lack of tenure means there are no guarantees, and it is in part the good economic deal that the university is getting that accounts for my sense of security. Would I feel so secure if I earned twice as much?

Let me close with a couple of remarks on my last pair of questions: **What happens to the high premium we put on having college classes taught by genuine scholars? Doesn't this model mean that we will have to change our approach to graduate education?** I think that the premium we place on teachers as scholars is wholly appropriate. At least in my subject, it

doesn't make any sense to try to teach the subject without being wholly immersed in its day-to-day workings. That means reading the journals and the newest books, participating in conferences and seminars, and making contributions to these forums. I don't envisage myself ceasing to be an active scholar in philosophy. However, for the teaching-oriented faculty member, what would not be in place would be a system of requirements – two papers a year, and only in the right journals; so many conference appearances; etc.

What this means is that graduate education must continue to be oriented toward scholarly achievement. To be trained to teach a subject at the college level is to be trained in the subject. However, I also think that graduate schools need to put more emphasis on training for the teaching profession. The emphasis has traditionally been entirely on research. Certainly, there are teaching assistantships, but from my own experience this is a source of some embarrassment to the department. It's grossly underpaid work that is a necessary evil to keep graduate students in the program. It certainly is underpaid if the trade-off is entirely the teaching assistant's labor for the university's pennies. But if the institution makes the teaching assistants' experience properly a matter of professional training – as too often fails to be the case – then the trade-off starts to look better. The teaching assistant is getting professional training and is being paid a modest amount for it.

I'd just like to summarize in a very few words by saying that I hope it's clear that instituting a new model of diverse faculty roles requires a substantial rethinking of the traditional approach. It's the need for that substantial rethinking that has made many in the profession reluctant to countenance regular teaching-only faculty. But perhaps changes that are being forced on the profession from without, such as the erosion of traditional tenure, and a revision of the relative emphasis between research and teaching will bring about a new attitude to the role of lecturers in the university.

Postdoctoral Education: Current Issues and the UNL Postdoctoral Program

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Abstract

Postdoctoral appointees are responsible for conducting a very large part of America's research work; however, there are serious issues concerning their employment status, compensation packages and career opportunities. We cite a brief bibliography of reports and recommendations on postdoctoral education, from which we draw several suggestions relative to enhancing the postdoctoral experience. Finally, we discuss the postdoctoral education program at University of Nebraska - Lincoln (UNL), which is meant to illuminate for other Midwestern institutions some of the recommendations put forth by opinion leaders in higher education, including postdoctoral associations, the Association of American Universities, and the National Academies.

Introduction

There are now approximately 52,000 postdoctoral appointees working in American universities, government laboratories, industries, and think tanks. Most of them are life scientists, particularly biomedical scientists, and most are working

in California and on the Eastern seaboard. Although postdoctoral appointees are responsible for conducting a very large part of America's research work, serious issues concerning their employment status, compensation packages, and career opportunities have come to light. In this paper we outline some of these issues and report on suggestions that recently emerged from the Convocation on Postdoctoral Education, held March 1, 2001, at the National Academies in Washington, D.C. We also describe our work on postdoctoral education at the University of Nebraska – Lincoln. UNL is a Midwestern Carnegie R-I research university, with features resembling many Midwestern institutions, including Big 12 institutions. Perhaps some of our experiences can offer indirect assistance to other universities.

Definition and Current Status of Postdoctoral Appointees

In their Report and Recommendations, the AAU Committee on Postdoctoral Education (AAU 1998) offered a definition of a postdoctoral appointee. Postdoctoral appointees, most often referred to as "postdocs," are recent doctoral graduates on temporary appointments involving substantially full-time research or scholarship. These appointments are viewed as preparatory for academic or research careers and are taken under supervision of a senior scholar at a university or research institution. Most postdocs work in science and engineering, particularly the life and biomedical sciences.

The population of postdocs in U.S. institutions has grown from a handful in the last decade of the nineteenth century to about 17,000 by 1975 (AAU 1998). The population continued to grow through the 1980s and 1990s to the contemporary number of about 52,000 (COSEPUP 2001). Besides their research work, postdocs also contribute training and education to junior scientists. In ideal situations, postdocs and their supervisors work in mutually beneficial relationships in which postdocs gain experience, mentoring, and career skills and their supervisors gain the skills, enthusiasm, and energy of talented, highly trained scientists.

Aside from increasing numbers, the nature of postdoctoral appointments has changed in other ways as well. While most postdocs are appointed in universities and research institutes, increasing numbers are employed in industry and in U.S. government research laboratories, such as the USDA Agricultural Research Service labs. Contrary to the AAU definition, many postdocs are supervised not by senior mentors, but by junior faculty members who lack the experience required to provide ideal career mentoring and opportunities. In addition, the length of the postdoctoral phase of research careers has increased from one to three years in the 1970s to six or seven years or even longer now (COSEPUP 2000). Very often the role of postdocs has changed from one of gaining advanced training and experience in preparation for the next phase of career to one of contributing a particular skill set required for the needs of a principal investigator's grant objectives (AAU 1998). Similarly, many postdocs now regard their (third or fourth) postdoctoral appointment as a "holding pattern" that offers little more than an employment venue while awaiting a permanent position (AAU 1998). Given the number of postdocs now working in America, a permanent research position will remain an elusive career objective for many of these quite talented scientists. In many fields within the life sciences, postdoctoral training is now regarded as a mandatory part of the credential.

The contemporary status of postdocs is actually more dismal than the foregoing remarks suggest. Historically, postdoctoral appointments were brief, productive, and entirely voluntary phases in emerging research careers. Postdoctoral stipends were traditionally quite low and carried virtually no benefits, such as health insurance. When taken as a few months of additional training, however, the postdoctoral phase was regarded as just an additional few months or so of graduate school. On the other hand, the current status is marked by lengthy service in the postdoctoral rank (CPST 1997; AAU 1998). Salaries remain low and unevenly spread among postdocs. Some postdocs might earn more than a beginning assistant professor; others receive less than some of their graduate student colleagues. Benefit packages range from thin air to basic health insurance, possibly coupled with vacation time. The increasingly lengthy service in low-paid, unstable positions typically occurs during the postdocs' crucial partner and family-

forming years. These forces combine to exert very real and painful pressures on postdoctoral scientists.

Other issues muddy the postdoctoral waters. For example, in many host institutions postdocs exist in a foggy status, as neither students nor professionals (Ferber 1999). Although this may not appear serious, the uncertainty has made it very difficult (and in some cases, impossible) to obtain a library card, participate in campus recreational facilities, or purchase a parking permit. Many postdocs do not even gain the advantages of formal evaluation procedures. If the ideal and mutually beneficial postdoc-mentor relationship breaks down, many institutions lack formal grievance procedures for postdocs.

Overall, the current status of many of our 52,000 postdocs can be characterized by lengthy servitude in positions that offer miserly compensation packages, little recognition, and decreasing chances for permanent, satisfying research careers.

The Challenge to Improve the Status of Postdocs

Possibly the first direct force to improve the status of postdocs came from within the postdoctoral ranks. Postdocs at Johns Hopkins University formed the first Postdoctoral Association in 1992 (Cavanaugh 1999). There are now well over 20 such associations at universities in America, Canada, and Europe. Most of them work in cooperation with university administrators to develop enduring and meaningful policies relative to postdoctoral employment and to create opportunities for mutual support.

The work of the Johns Hopkins Postdoctoral Association and the similar organizations that followed has stimulated considerable national discussion of the status of postdocs. The Commission on Professionals in Science and Technology report on postdocs (CPST 1997), the AAU Committee on Postdoctoral Education Report and Recommendations (AAU 1998), and the Committee on Science, Engineering and Public Policy report on enhancing the postdoctoral experience

(COSEPUP 2000) are probably the most important expressions on postdoctoral education.

In particular, the COSEPUP report offers direct recommendations from five points of view: mentors, postdocs, administrators, federal grantors, and professional societies. These recommendations were given a human face in March 2001, at the Convocation on Enhancing the Postdoctoral Experience for Scientists and Engineers, held at the National Academies in Washington, D.C., with representatives of each of the five perspectives just mentioned. Although we cannot reproduce the long lists of recommendations here, it may be valuable to lift up a few representative ideas. The postdocs surfaced many suggestions, including the need for a postdoctoral handbook on each campus. They also suggested institutions ask themselves, "What can we do to maximize the postdoc experience?" Possibly the most pithy recommendations came directly from COSEPUP, which noted that postdocs should bear primary responsibility for the success of their experiences, and that institutions should maintain an office of postdoctoral education. The main thrust of all the major reports and recommendations on postdoctoral education forcefully drive this conclusion: the postdoctoral phase of science and engineering careers is important and it needs considerable attention. The complete lists of recommendations are presented in the COSEPUP report (COSEPUP 2000).

The University of Nebraska - Lincoln Program

The major reports provide powerful motivations for enhancing postdoctoral education. That said, we recognize special needs among Midwestern universities. As mentioned earlier, most working postdocs are employed in California and on the East Coast. There are fewer postdocs working in the Midwest. For institutions with growing research portfolios, such as UNL, there is increased need to recruit talented postdocs to the Midwest. After moving to the Midwest, however, postdocs discover other issues that compound the difficulties associated with postdoctoral service. Because the numbers of postdocs are relatively low, they can become isolated within their host university. The isolation reduces

opportunity to form professional and personal relationships with other postdocs. It might be thought that postdocs would be better advised to look to the coasts to advance their research careers.

We believe that giving due attention to postdoctoral education can enhance the careers of postdocs and, in turn, help bring more postdocs to the Midwest. Also important, however, the presence of specific programming for postdoctoral education can also enhance the careers of faculty mentors who are trying to recruit gifted people into their programs. High-caliber postdocs can well ask, "Why move to a Midwestern program?" UNL faculty can lift up the postdoctoral education activities as one line that may help advance the careers of young scientists and thereby be more competitive in attracting postdocs.

With the possibilities of improving the recruiting posture of our faculty in mind, UNL has set a postdoctoral education program in motion. The work is still in process, but here we outline our efforts. First, an Office of Postdoctoral Education was established within the Office of Graduate Studies. David Stanley serves in a part-time role as Special Assistant to the Dean of Graduate Studies.

At UNL we are completing a handbook titled *Postdoctoral Scholars in Nebraska: A Handbook for Postdoctoral Scholars and Their Faculty Mentors in Nebraska*. This will include three sections. The first introduces the Office of Postdoctoral Education and presents a brief description of the UNL campus. The second section describes resources for postdocs and their faculty mentors. Included are website addresses of campus-level postdoctoral associations, as well as addresses for issues in the postdoctoral experience. This is followed by subsections on managing professional careers and on grant writing and funding opportunities.

The final section is devoted to information on the status and employment of postdoctoral personnel according to existing UNL policies. Some of the points include salary guidelines, immigration and visa information, maternity leave, policies on consulting and outside employment, nepotism, consensual and domestic relationships, responsible use of UNL computers and information systems, and guidelines for evaluation of postdoctoral associates. The completed handbook

will be available to colleagues with interest in postdoctoral education and issues.

Beside developing a handbook, UNL can offer career development opportunities to postdocs who wish to participate. These include evening courses on grant writing and professional development that are already in place. The Office of Graduate Studies also maintains an attractive lounge, which we hope will be used as a meeting place for social and professional networking among UNL postdocs. We are also working to identify all of our postdoctoral appointees and to establish a system to track their experiences after leaving UNL.

A Concluding Remark

The UNL work on postdoctoral education is not far enough along to allow a meaningful evaluation of its value, either to UNL or to our postdocs. It is probably not possible to meet all the needs of postdoctoral personnel nationally or at any given institution. We can, however, give postdocs a voice to address major issues. And we can offer enhanced opportunities to develop their careers, which is why they became postdocs in the first place.

On a hopeful note, there are times and places when the postdoctoral experience is a valuable career-building step. Perhaps one of the most famous former postdocs is James Watson, who in the early 1950s was a co-discoverer of the structure of DNA. He earned his Ph.D. for work on viruses and wanted to use a postdoctoral opportunity to improve his understanding of biochemistry. Watson made his contribution to the Nobel prize-winning discovery while on postdoctoral appointment.

References

- Association of American Universities (AAU) Committee on Postdoctoral Education. 1998 (October). *Report and Recommendations*.
- Commission on Professionals in Science and Technology (CPST). 1997. *Postdocs and Career Prospects: A Status Report*.
- Committee on Science, Engineering and Public Policy (COSEPUP). 2000. *Enhancing the Postdoctoral Experience for Scientists and Engineers*. Washington, D.C.: National Academy Press.
- Ferber, D. 1999. Getting to the Front of the Bus. *Science* 285, 1514-1517.
- Cavanaugh, J. P. 1999. The Postdoc's Plight. *Johns Hopkins Magazine*, February, 1999.

Ethical Challenges in Graduate Education Exploitation vs. Opportunity: A Postdoctoral Student's Perspective

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Abstract

This presentation will discuss several concerns now facing postdoctoral researchers and will focus specifically on issues relevant to postdoctoral trainees performing biomedical research in a university context (as these comprise the majority of the postdoctoral population). Specifically, I will discuss the question of numbers and whether we are overproducing scientific trainees, the lack of university oversight for postdocs, and the importance of career development programs and quality mentoring for postdoctoral researchers. I will conclude with some broad suggestions for universities about ways to improve the situation for their postdoctoral populations.

Introduction

I would like to thank the organizers for inviting me to speak at this conference. I have been asked to focus on the subject of postdoctoral researchers for this morning's provocative panel, and my remarks will specifically focus on postdoctoral researchers within the university setting, as that is where the majority of postdoctoral researchers are presently located (COSEPUP 2000). I will also be focusing largely on scientific postdoctoral researchers, as these are the overwhelming majority of the postdoctoral pool.

For my comments this morning, I want to move away from the somewhat black-and-white question of exploitation versus opportunity because I think it fails to capture the nuances of the multifaceted situation of postdoctoral researchers. Like all true ethics scenarios, there are multiple interests involved and a great deal of often vexing complexity. What I thought I would do instead is describe some of the ethical issues involving postdoctoral researchers using data from the postdoc survey we have recently conducted to illustrate my points. I will then propose a few potential mechanisms for reducing possible negative situations and enhancing the overall experience of postdoctoral researchers within the university setting.

Defining the Postdoctoral Researcher Population

The first thing I must do is clarify what I mean by postdoctoral research – which is actually far trickier than it sounds. The definition I will be using of the term *postdoctoral researcher* is someone who has recently received his or her doctoral degree and is employed in a temporary research position for the purpose of gaining more training that will then allow that individual to move on to a more permanent position. Unfortunately, postdoctoral researchers go by many different titles including postdoctoral fellows, visiting fellows, research fellows, research associates, research instructors, etc. This makes it incredibly difficult to get a good tally of how many individuals are actually in this career phase. Recent attempts to identify the true extent of the postdoctoral population by the National Science Foundation (NSF), the National Institutes of Health (NIH), and the Committee on Science Engineering and Public Policy (COSEPUP) report for the National Academies have indeed found this to be the case, and very few universities have an accurate idea of how many postdocs are actually working within their confines. That being said, the most current estimate for the total number of postdocs employed in the U.S. is approximately 52,000 (COSEPUP 2000). This figure includes both U.S.-trained individuals as well as foreign-trained individuals currently working in the U.S.

Overproduction?

This number has been steadily increasing over the past 20 years. (The COSEPUP report cites the National Science Foundation as estimating that in 1981 there were around 18,000 postdocs.) However, the number of jobs in academia (which is the career of choice among most research postdocs) and the number of permanent scientific positions (including government, industry, and academia) have not increased at nearly the same rate as the postdoc pool. The Office of Scientific and Engineering Personnel of the National Research Council in their 2000 study, *Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists*, calculated the number of new scientific positions that would be created if the scientific labor market were growing at the same rate as the rest of the U.S. labor market. By their calculations, the number of new jobs created/year is less than one-third the number of new Ph.D. graduates/year. This factor is likely the driving force behind the swell in the number of postdocs seen over the past decade as this trend probably began sometime in the late 1980s. While it is unclear how quickly the scientific labor market actually is growing (this is very difficult to estimate), it is probably safe to assume it is not growing at 3.5 times the rate of the entire labor market. The ethical dilemma inherent in this situation is how best to balance the good of the American tax-paying populace – which has certainly benefited from this swelling pool of cheap, highly-skilled, scientific labor – against the good of the postdocs themselves.

University Oversight (Salaries and Benefits)

The next issue I would like to raise is the general lack of status and benefits among postdocs. Postdocs are neither students nor faculty in the eyes of most universities. They are also not perceived nor treated as a homogeneous pool. Postdoctoral researchers that are funded through the NIH-sponsored RO1 grants of their principal investigators are often considered to be employees, while postdoctoral researchers (often within the same lab and working on the same project) that are funded from departmental training grants or National Research Service Awards postdoctoral fellowships are considered trainees. This “employee vs. trainee” designation often predicts whether a postdoc will be

eligible for personal or family health benefits, retirement benefits, vacation time, sick leave, and other types of employee benefits. The typical trainee position often receives none of these benefits.

This employee/trainee designation can also influence whether the postdoc has opportunities to teach, attend courses and career development forums, receive directed career mentoring, and participate in other types of training opportunities. Postdocs designated as employees are often strongly discouraged from taking advantage of any of these types of opportunities, the claim being that these types of forums take them away from the lab when they are being paid to perform research.

Different postdoctoral designations can influence pay scales as well. Because the postdoc pool is heterogeneous in its funding sources and employment categorizations, many universities have no set standards regarding postdoc salaries, benefit entitlements, opportunities for career advancement, or use of university resources. This lack of recognition and oversight by the university basically leaves the fate of postdocs in the hands of their individual principal investigators. This can lead to a variety of conflicts of interest/unethical work situations.

Our recent survey of postdoctoral researchers at Washington University revealed that as of November 2000, 38 percent of postdocs were receiving \$2,000-\$10,000 less than 1999 NRSA NIH salary guidelines, which have been used as the de facto salary standard by many universities, even though they are very low, do not adjust for cost of living and, for the most part, have not kept up with inflation since the salary levels were set back in the 70s. The average age of the postdoc population is 35 and one-third to one-half of postdocs have children (COSEPUP 2000).

Now, St. Louis is a very affordable city, especially compared with cities on either coast, but the average cost of childcare plus housing among the postdocs we have surveyed is \$1350/month or \$16,200 dollars a year. This doesn't leave much left over after taxes, especially if the family is being supported on a single salary, which is often the case for foreign national postdocs present within the U.S. on

visas. (Spouses of the visa holder are not allowed to hold jobs within the U.S. unless they have their own visa status, and only particular visas allow them to work.) If postdoctoral tenure were only a year or two (as was the case during the 1960s and early 1970s), this might not be as much of a problem. The average postdoctoral tenure, however, has been increasing steadily since then and is now approaching five years (COSEPUP 2000), with second and third postdoctoral stints not uncommon.

The low salaries and cumulative loss of earnings common among postdocs is one problem, but another unexamined cost of a postdoc is the loss of retirement benefits. The vast majority of postdocs receive no retirement benefits from their universities and do not earn enough to invest on their own. (In addition, IRS regulations prohibit individuals on fellowships/traineeships from investing in Individual Retirement Accounts.) Coupling this with the fact that this is, on average, five years during an important earning period of an individual's life (ages 32-37), this will have a striking effect down the road as the postdocs reach retirement age. A simple calculation, given the importance of compounding interest over time, shows that **the difference** between two individuals, both investing \$100.00/month (a fairly small amount) at a conservative return of 8 percent, investing for 35 versus 40 years, will be \$120,000.00 by the time they retire. That is a significant amount of money. Fortunately, the NIH has recently recognized this salary problem and in a policy statement issued not long ago, NIH pledged to raise the NRSA salary guidelines to a starting salary of \$45,000 in the next few years. Let us hope that they stick to that pledge even in the face of the end of the doubling effort for federal NIH funding. I would urge universities to implement the new increased NRSA guidelines as their salary floor for all postdocs.

Mentoring and Career Development

The last point I would like to raise is one that is probably familiar to many of you – the issue of mentoring and career development. In our survey of postdocs at Washington University, on a scale of 1 to 10 with 1 being the lowest and 10 being

the highest, the postdocs rated the amount of professional training they were receiving at 4. Again, most universities have few mechanisms for providing postdocs with the professional training they need to obtain satisfying permanent careers. Professional training is completely in the hands of the postdoc's individual principal investigator and, unfortunately, many PI's are falling short of their responsibility, failing to provide their postdocs with opportunities to write or review papers, apply for grants, attend national meetings, or develop effective teaching and communication skills. Industries look for indications of being a successful team player and being able to meet deadlines, qualities that are often ignored in the academic setting. Universities and colleges look for demonstrations of teaching ability, experience with course or curriculum development, and ability to generate funding, but many postdocs have little demonstrable experience with these facets of university life. Given the incredibly competitive job market, this professional training is crucial for the future success of the postdoc. Many principal investigators fail to perceive that it is their responsibility, as the primary beneficiaries of the hard work for little pay of their postdocs, to assist their postdocs in preparing for, searching for, and obtaining a satisfying permanent position.

In summary, the ethical questions regarding postdocs that I have raised are:

- 1) Are we are creating too many postdocs?
- 2) How are we to balance the country's need for a cheap, highly skilled science and technology labor force with the right(?)/need of individual postdoctoral researchers to benefit from their years of training and education?
- 3) How should we best handle the highly problematic employee vs. trainee dichotomy? (Postdoctoral positions contain elements of both and should receive the benefits of both roles.)

- 4) How should we address the inherent conflict of responsibilities facing principal investigators as both employers and advisors/trainers whose own career success depends on the productivity of their trainees?

Other Issues for Consideration

Based on numerous surveys, the major concerns for most postdocs are salary, status, and future prospects (and benefits to a lesser extent).

We need formal structures for postdocs, including grievance procedures, salary and benefit standards, and other oversight mechanisms.

Tracking/exit surveys are both highly effective ways to assess our successes, and they provide the research university with an excellent source of feedback and guidance.

Extra care and attention must be paid to our foreign national postdoctoral researchers. Language and cultural barriers as well as the visa and citizenship processes make it even less likely that these individuals will have their needs met.

Bibliography/Useful Resources

Association of American Medical Colleges. 2000. *Self-Assessment of Graduate Programs in the Biomedical Sciences*. A guide with advice for university research programs on developing effective communication, training structures, surveys, advice on mentoring, etc.

Bioethics Resources on the Web – National Institutes of Health
<http://www.nih.gov/sigs/bioethics/>

Committee on Science, Engineering and Public Policy (COSEPUP). 2000. *Enhancing the Postdoctoral Experience for Scientists and Engineers*. Washington, D.C.: National Academy Press. Available at <http://books.nap.edu/catalog/9831.html>

National Research Council, Office of Scientific and Engineering Personnel. 2000. *Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists*. Washington, D.C.: National Academy Press. Available at <http://www.nap.edu/books/0309069815/html/>

Science Next Wave, *Science Magazine's* website for young researchers.
<http://nextwave.sciencemag.org/>

A Graduate Student Perspective: Exploitation or Opportunity

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The graduate students at today's universities play many roles. We are teachers, researchers, scholars, technicians, grant writers, authors, editors, and reviewers. Most importantly, however, in each of these roles we are *students*. Although this role may seem obvious, the impact that being a student can or should have on the other roles we play can be often overlooked by students, faculty, and administration alike. In an ideal world, placing the student role above all others would mean that each role we assume would be designed to augment our educational experience rather than hinder it. In reality, the boundaries between opportunity and exploitation are often much harder to delineate. Rather than offering hard data and statistics, I would like to offer my own observations into this matter based on my experiences and contacts with graduate students in a variety of disciplines through my involvement in the National Association of Graduate-Professional Students.

One of the potential problems in training students to fulfill all their roles is an unbalanced workload/benefit ratio. Students may take on the roles of teachers and technicians to gain valuable experience, as well as to earn a living in graduate school. Problems may arise when teaching loads interfere with the ability to fulfill other important duties, including research and course work. When such a situation has been imposed on the student by a university (e.g., because of insufficient stipend support to students, departmental requirements, etc.), this is a case of exploitation. I have heard stories of far too many universities where students are placed in the role of junior faculty without the corresponding benefits (including health benefits, teaching assistant help, etc.). Universities should clearly not use

students as stop-gaps for labor shortages on their campuses due to shrinking budgets for full-time faculty members or increases in enrollment beyond departmental capacity. Nor should a student's lab schedule as a technician or research assistant for a professor's funded project grossly interfere with time devoted to progress in the student's own research.

There are more subtle ways that exploitation may occur that may stem from too *little* experience rather than too much experience. For instance, students often find themselves earning their keep as teaching assistants – a requirement of the department – for a certain number of years or semesters. Many students, especially after multiple teaching assistantships, find few gains in teaching experience and view the experience as simply a requirement to fulfill for their degrees or to earn money. Thus, universities have a responsibility to make sure requirements remain not only reasonable in terms of time investment but also meaningful to the student's professional training.

The necessity of juggling the many roles of a graduate student can also leave little room for emphasis on the development of marketable professional skills. Too often the perception is that students, just by virtue of tackling an advanced degree, will be implicitly prepared to meet the demands of the job market and chosen profession. For instance, the attitude among many faculty today is “if the research is good, you will land a good job.” This notion is outdated, to say the least.

Undoubtedly, pursuing a graduate degree offers opportunities to gain many valuable skills, including time management, problem solving, the ability to work independently, and many others. However, now more than ever in today's competitive job markets, job candidates in academia must have a complete package of demonstrated skills in teaching, research, communication, technology, and university service. Candidates in industry job markets have even more pressure on them to demonstrate such skills, which are often not taught in the library or the lab. In creating these roles for graduate students to fulfill, universities must not lose sight that the students are *still in training* and require

more explicit opportunities to develop professional skills not learned in the classroom to prepare them for today's job market.

Placing such a high demand on students' time as they race to fulfill each of their roles satisfactorily also often means that the boundary between work life and home life becomes rather indistinct. Most graduate students feel as if graduate work is the "default" mode. When they do indulge in free time, they often experience a sense of guilt and are forced to compensate for the free time by working harder later. Although I am sure this experience is not limited to graduate students, there is still an undeniably intense pressure to be many things to many different people who might often act, unknowingly or knowingly, as if students' time is theirs. A professor I knew once referred to academia as the last remaining monarchy, in which one "ruler" controls the livelihoods of his or her "indentured servants." Students in a bad advising situation often feel powerless to voice objections about what they feel are unreasonable demands on their time. Universities can discourage such exploitation by creating clearer guidelines for time spent in serving the university, department, or advisor in duties not directly related to a student's progress in course work or research.

Finally, there is an ever-present problem in the job market of the supply of graduate students greatly exceeding the demand for the advanced degree holders they eventually become. Departments and laboratories may admit graduate students they cannot support with a living wage – then reap the benefits of highly talented individuals who devote a great deal of time teaching classes and running lab projects without fair wages or benefits. Although the trials of a struggling department or university in hard times are understandable, such treatment of students is never acceptable. The primary goal of the university should be to train its students to the best of its ability by creating meaningful requirements and opportunities for students to develop as professionals in their chosen careers. Likewise, students have the responsibility to see that they take advantage of what the university can offer them in all aspects of graduate training. Mutual respect and understanding of what universities need and what students need are key to meeting this goal. Universities who cannot provide an appropriate environment (both scholarly and financial) for learning and developing important professional

skills for all their students should reduce the number of students they admit until they can provide such an environment. Universities failing to do this risk being charged with exploitation of their trainees.

The good news in all of this is that there are ways to turn situations from exploitation to opportunity for students. A key to success in creating opportunities for graduate students is to form collaborative relationships between administration and students. Open dialogue between administration and the students they serve is critical for these collaborations. Ignoring the student experience can only cause problems for everyone involved. Unsatisfied students could lead to everything from decreased recruitment in unhappy departments to the formation of unions to get the administration to wake up to the problems students are having. How much easier would it be to just talk to each other about how things are going every once in a while and take some preventative action to resolve issues? Students cannot be expected to understand the resources of the university, and administration cannot be expected to understand the needs of students, if they never talk to each other. Relying on faculty as an in-road to student opinion is unreliable at best, considering many of the issues already discussed. Students who feel they have an effective outlet for discussion of new ideas or airing of grievances will be much less likely to take matters into their own hands (e.g., form unions).

Washington University at St. Louis has just such an outlet that works very smoothly and benefits both the administration and graduate student body. Graduate students and the Graduate School of Arts and Sciences work together in a shared governance model of education. The surprisingly simple notion is to involve students in their own training. Washington University graduate students have worked successfully with the graduate administration on several projects over the past decade. For instance, the Graduate Council of Arts and Sciences, which makes certain policy decisions for the Graduate School, has 50 percent faculty and 50 percent students – and everyone gets a vote! Graduate students also serve as representatives of student interests to the Board of Trustees. Moreover, we have regularly scheduled open forums with the dean of the Graduate School to discuss issues of interest, including teaching experience,

faculty mentoring, health care, and university housing. In addition, the Graduate Student Senate (the main student governing body of the Graduate School of Arts and Sciences) has published a document called *Graduate Student Rights and Responsibilities*, endorsed by the Graduate School, that outlines the role of graduate students in their own education and in shared governance with the Graduate School.

There are many more examples of this model's success at our university (see the Graduate Student Senate website at <http://artsci.wustl.edu/~gss/>). The bottom line is that students who raise certain issues find a responsive administration that will work with them to make improvements in a timely fashion. Collaboration between administration and students means students are more likely to view a current unsatisfactory situation as a "work in progress" rather than a "dead end," creating a much more effective (and pleasant) atmosphere in which to complete their training.

In addition to collaborations between students and administration, as mentioned above, opportunity for students can also be created by recognizing a student's need to acquire a range of professional skills crucial for success in competitive job markets. For example, universities can sponsor various workshops and seminars on career planning and professional development. Skills valuable in any career, such as skills in communication, mentoring, technology, and teamwork, are too important to leave to students to "learn by osmosis." Universities should strive to create more direct forums for career development for their students to enhance their prospects in both academic and non-academic job markets.

Universities can also make existing experiences more meaningful for students. For example, to turn a teaching assistantship into a more meaningful professional experience, students can be given increasing responsibility in directing the courses with which they assist, including giving lectures, writing a course syllabus, and planning tests.

In summary, there is the potential for graduate students to be exploited in several ways, including assigning high workloads with low wages and benefits, placing too

much power in the hands of faculty advisors in controlling a student's time, requiring work of students that is not meaningful to their professional development, and producing too many Ph.D.s who are ill-prepared for today's job markets. The silver lining to this cloud is that the graduate experience is also ripe with opportunities. Such opportunities can be created by striving to make university and departmental duties a more meaningful complement to student training, by sponsoring workshops and other forums for development of important professional skills not explicitly taught in the lab or classroom, and by inviting students to be involved in their own training through shared governance. Making such changes to graduate education requires vision and initiative in administrative and student leadership. These two groups must be proactive in seeking each other out for mutual benefit. They must commit to a collaboration for success and formulate plans to overcome obstacles. Though the challenge may be great, the investment is worth it.

The Kept University

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Jennifer Washburn is a freelance journalist based in New York City and a fellow at the New America Foundation, a nonpartisan public policy institute located in Washington, D.C., whose purpose is to bring promising new voices and ideas to the fore of America's public discourse. The talk she presented at the Midwestern Association of Graduate Schools was based on a cover story she co-authored with Eyal Press in the Atlantic Monthly in March 2000, also titled "The Kept University." Last year, this article was awarded the National Association of Science Writers' "Science-in-Society" journalism award.

Prior to joining the New America Foundation, Ms. Washburn was a fellow at the Open Society Institute in New York City, where she examined the growing privatization of the public sphere. Before that she served as a senior research associate at the World Policy Institute, a foreign policy think tank housed at the New School University in New York City. Ms. Washburn's journalism articles and opinion pieces have appeared in a range of publications, including the Washington Post, American Prospect, the Journal of Commerce, Ms. Magazine, Mother Jones, and Washington Times.

Increasingly, we live in an age where ideas are seen as commodities and the control of information is central to our economy, so it's really no surprise that, in this context, universities are coming to be seen as incubators of new ideas and are being asked to play a more prominent role in fueling our nation's economic growth. Both the biotechnology and computer engineering revolutions were largely born out of university research labs, after all.

Yet my *Atlantic Monthly* article – which I co-authored with another journalist, Eyal Press, and which involved extensive research and interviews on numerous campuses – contends that without adequate safeguards, the growing ties between the academic world and industry threaten to undermine the university's unique role in our society as a place of disinterested inquiry, basic nondirected research, and critical thought.

Now I realize that that is a big claim. So what's my evidence? Well, the first place my research took me for the *Atlantic* article was the University of California at Berkeley – one of our nation's preeminent public universities – which in November 1998 signed a five-year, \$25 million sponsored-research agreement with Novartis, a Swiss-based pharmaceutical company and producer of genetically engineered crops. (I should note that Novartis has since separated its agricultural division, now called Syngenta, from its pharmaceutical division, but for the purposes of this talk I will continue to refer to the company as Novartis.)

The Novartis agreement provoked an uproar on the Berkeley campus and has since led to hearings in the California State Senate, because many people both on and off campus felt that several key provisions of the deal seriously compromised academic freedom. First, the deal allowed one private corporation to provide one-third of the research budget of an entire department – the Department of Plant and Microbial Biology – at a public university. Second, the deal granted the company first rights to negotiate licenses on up to one-third of the department's discoveries, including research that was funded not only by Novartis, but by federal and state sources as well. And third, Novartis was given two out of five seats on the university research committee, which sets the research agenda for the department and chooses which projects to fund.

The Novartis deal left the faculty in Berkeley's College of Natural Resources deeply divided. A faculty survey conducted after the agreement was signed revealed some striking findings. Although 41% of the faculty in Berkeley's College of Natural Resources supported the agreement as signed, over 50% believed it would have a "negative" or "strongly negative" effect on academic freedom. Further, roughly half believed it would erode Berkeley's commitment – as a land-

grant university – to “public good research,” and another 60% believed it would impede the free exchange of ideas within the university, which is really the hallmark of academic life.

One professor I spoke with, Ignacio Chapela, then-chairman of the College of Natural Resource’s Executive Committee, a faculty governing body, told me when I visited Berkeley that he no longer felt he could talk freely to his colleagues in the Department of Plant and Microbial Biology. The reason? He knew professors within the department were now obligated to keep proprietary information secret and he, himself, was afraid to share ideas that might then be handed over to Novartis. It’s worth noting that Chapela is not a knee-jerk critic of university-industry alliances. In fact, before coming to Berkeley, he spent three years working for none other than Novartis – then named Sandoz. But Chapela does object to the way this deal institutionalized Berkeley’s relationship with one company.

Was this deal just an aberration? In many ways it was not. Since 1985, corporate funding of universities has grown from \$850 million to over \$4.25 billion. Washington University has a long-time agreement with Monsanto, for example; Massachusetts Institute of Technology has a \$15 million agreement with Merck & Co; and Harvard’s Beth Israel Deaconess Hospital solicited bids from 40 companies to conduct joint research at a new medical facility.

Another marked trend is the boom in industry-endowed chairs. Freeport McMoRan, a mining company – which several years ago was the number one polluter of water in America – now holds a chair in environmental studies at Tulane. Kmart has endowed a chair at West Virginia University that requires its holder to spend up to 30 days a year training store managers. Elsewhere, buildings, athletic complexes, in some cases whole academic departments, bear the names of corporate sponsors.

The growing commercialization of the academy can be traced to the Bayh-Dole Act of 1980, which allowed universities to patent federally-funded research for the first time. Congress’ intent in passing Bayh-Dole was to bring ideas out of the

ivory tower and into the marketplace more quickly to help fuel U.S. economic growth. And I think to a large extent it has achieved this objective.

There are still no independent economic assessments of Bayh-Dole’s impact, but the American Association of University Technology Managers (AUTM) estimates that some 2,500 new start-up companies have spun directly from academic research labs since Bayh-Dole, which is why you see a clustering of biotech and computer firms around universities in the Research Triangle, Silicon Valley, and beyond. Over the last decade, moreover, AUTM estimates that new patents filed increased 77%, and new licenses and options executed increased 129%.

But other factors have also pushed universities to seek a growing portion of their funding from industry. These include the growing cost of doing research; a leveling-off of federal science funding (in all areas except biomedical research); and a serious decline, in many parts of the country, in state support for higher education.

While the federal government still supplies a majority of the funding for academic research (60% or about \$14.3 billion), the corporate share is growing. From 1980-1998, corporate-sponsored research expanded 8% annually, rising to \$1.9 billion in 1997 – nearly eight times the level of 20 years ago.

Finally, in addition to Bayh-Dole, it is important to note that Congress has passed numerous additional laws and tax breaks designed to nurture university-industry collaborations. Because so many federal grants now involve financial cost-sharing with industry, it has been estimated that the private sector probably influences somewhere between 20-25% of academic research.

The problem, I believe, is not university-industry collaborations. The problem is that universities are increasingly allowing industry to dictate the terms of their support in ways that fundamentally threaten academic freedom and the ability of the university to remain free of vested interests.

Put another way, the university – which is, really, the embodiment of our “common heritage” – is rapidly losing sight of the fact that serving private industry is not the same as serving the public interest. The American Association of University Professors expressed this beautifully in 1915:

All true universities, whether public or private, are public trusts designed to advance knowledge by safeguarding the free inquiry of impartial teachers and scholars. Their independence is essential because the university provides knowledge not only to its students, but also to the public agency in need of expert guidance and the general society in need of greater knowledge. . . .

In my talk, I will focus on three main areas of concern: endangering the open academic culture, mimicking industry, and skewing the research agenda.

Endangering the Open Academic Culture

The growth in corporate-sponsored research poses a threat to the open culture of the university, the right to publish, and the ability of professors to perform disinterested research that the public can trust.

The days of unrestricted private grants appear to be disappearing. Increasingly, corporations are unwilling to invest in academic research unless they can in some way control the results. This frequently means that corporations require professors to sign agreements laced with restrictive provisions, including, for example, requirements that investigators keep both the methods and results of their work secret for a period of time. A recent study in the *Journal of the American Medical Association* (JAMA) found that one in five scientists delayed publication for more than six months to protect proprietary information. This is despite the fact that the National Institute of Health (NIH) recommends that corporate sponsors be given no more than a one- to two-month delay on publication, which is sufficient time to apply for a patent.

Many scientists also report having an increasingly difficult time accessing basic research tools due to proprietary restrictions. Steven Rosenberg, one of the country’s leading cancer researchers at the National Cancer Institute, told me that to gain access to reagents he is often asked to sign agreements that require him to keep the results and methods of his research secret for up to ten years. Rosenberg has become so alarmed about this threat to the open exchange of information and research materials that he has called on professors and research institutions to reject these confidentiality agreements on principle – but unfortunately, as I’ll discuss later in my talk, few institutions have heeded his call.

Beyond the question of secrecy lies a more serious concern: namely, the potential that companies will influence the design – and in some cases the results – of the studies they fund.

In a recent article published in the *New England Journal of Medicine*, Dr. Thomas Bodenheimer, an internist and professor at the University of California at San Francisco (UCSF), conducted an extensive search of the medical literature and concluded that over the past decade the arms-length relationship between academic-medical researchers and their sponsors has dangerously broken down. Bodenheimer found extensive evidence of publication bias (a tendency among corporate sponsors to publish only results that are favorable), ghostwriting (wherein companies pay scholars to add their names to journal articles written by corporate marketing departments), and study-design bias. One study published in the *Archives of Internal Medicine*, for example, found that in 54% of company-sponsored arthritis-drug trials, *the dose of the funding company’s drug was higher than that of the comparison drug*, increasing the chances that the funder’s drug would appear more effective.

Bodenheimer also found that companies now frequently retain control over the raw data from a clinical trial, making it far easier to spin the results. Some principal investigators have the capacity to analyze all the data from a large trial. But increasingly, according to Bodenheimer, “companies prefer to retain control over this process.” An executive at one company told Bodenheimer, “We are reluctant to provide the data tape [containing the complete clinical trial data]

because some investigators want to take the data beyond where the data should go.”

Dr. James Kahn, an AIDS researcher at UCSF, recently experienced this phenomenon first hand. Last year, when Dr. Kahn and another biostatistician at Harvard, Dr. Stephen Lagakos, attempted to publish new research showing that an AIDS therapy was ineffective, their corporate sponsor, Immune Response, tried to block publication. According to the researchers and UCSF, the sponsor refused to release the complete data from the trial. Still, Kahn and his colleagues pressed ahead with what they estimate was 95% of the critical data set, publishing an article in the *Journal of the American Medical Association* last year. The company quickly responded by taking legal action against Kahn and the university, filing for \$10 million in damages.

Now some would say that stories like Dr. Kahn's are exceptional. In fact, however, the list of such cases appears to be growing; I know of four other high-profile cases besides Kahn's. And, unfortunately, in some cases the universities themselves have bowed to industry pressure, rather than defend their researchers.

In 1996, for example, David Kern – the former director of occupational medicine at Brown University – was working under a sponsored-research agreement. In the midst of this, he discovered evidence of a dangerous new lung disease spreading among workers at a Rhode Island factory. But when Kern tried to publish his findings, the company threatened to sue, citing a confidentiality agreement that forbade the disclosure of “trade secrets.” In reality, Kern's own research involved no trade secrets; he was simply trying to document the existence of a new disease – which, by the way, was eventually recognized by the Center for Disease Control. But Brown University, rather than defending Kern, tried to dissuade him from publishing. Shortly thereafter his position was eliminated.

Mildred Cho, a researcher at Stanford's Center on Biomedical Ethics, points out that for every James Kahn or David Kern who steps forward to oppose this overt

form of corporate influence, there are an unknown number of researchers who may voluntarily design their research in such a way that it is more likely to reach conclusions favorable to their corporate sponsors.

Cho is suspicious of bias for good reason. In 1996, she published a study in the *Annals of Internal Medicine* that found that 98% of industry-sponsored drug research studies reflected favorably on the funding company's drug, versus 79% of non-industry funded studies.

Numerous other studies have revealed similar disparities, suggesting that when research is industry-sponsored, there is a higher likelihood that the results will favor the corporate sponsors' interests. A study published last year in *JAMA*, for example, found that nonprofit-funded studies of cancer drugs were eight times more likely to reach unfavorable conclusions than industry-sponsored studies. Another analysis of 70 studies of cardiac drugs (calcium channel blockers) found that 96% of authors who were supportive of these drugs had financial ties to the manufacturers, whereas only 37% of authors who were critical had such ties.

Now, obviously, the fact that a professor receives industry funding does not mean that his or her research is necessarily biased. But will the public continue to trust academic research to the same degree? Should the public?

What's particularly troubling is that many professors performing sponsored research also have extensive financial ties to the companies sponsoring their work. Sheldon Krinsky, an expert on conflicts of interest in science at Tufts, examined over 800 scientific papers published in a range of academic journals and found that slightly more than one-third of the authors had a significant financial interest in their reports. These interests included having a seat on the corporate sponsor's board or owning stock, for example. Even more alarming, according to Krinsky, these ties are rarely disclosed. Krinsky examined 62,000 research articles and found that corporate financial ties were disclosed only .5% of the time.

Even those who discount the significance of such findings should, I think, be concerned that, in the absence of strong disclosure and strong oversight policies, such ties could undermine the public's trust in science – and perhaps even in universities, themselves.

This danger was brought home dramatically after Jesse Gelsinger, an 18-year-old boy from Tucson, Arizona, died in a gene-therapy experiment at the University of Pennsylvania in September 1999. In the Gelsinger case, both the lead researcher and the university owned stock in the company funding the clinical trial. Of course, the deeper problems at the University of Pennsylvania involved serious medical and ethical violations by the lead researchers. These included failing to properly report serious adverse events and withholding evidence that monkeys undergoing similar treatment had died in earlier experiments. But the potential for financial gain really alarmed the public, and rightly so.

After Gelsinger's death, the federal government found that numerous other gene-therapy researchers – many of whose experiments were funded by their own start-up companies – had similarly failed to report adverse events and even deaths, as required under federal law. Moreover, since 1999 at least eight universities have had their research restricted or shut down completely by federal authorities, due to failure to properly oversee human clinical trials.

As David Korn of the Association of American Medical Colleges recently noted, if we expect the public to continue funding academic research and trusting the results, “even the perception that faculty investigators or their institutions have financial interests that might compromise their independence and credibility cannot be tolerated.”

Mimicking Industry

There is a second problem with the way commercialism is being pursued on campus today. In their eagerness to cultivate alliances with industry, universities themselves are beginning to look and behave like for-profit companies them-

selves. Schools like Johns Hopkins now operate their own internal venture capital funds to bankroll commercially promising lines of research. And many universities are now investing heavily in the companies sponsoring their professors' research, creating the potential for serious institutional conflicts. In the 1980s and 1990s, for example, Boston University plowed nearly a fifth of its endowment into a biotech firm founded by several BU professors. Later, when the company's stock plummeted, the university was accused of egregiously mismanaging the school's endowment to prop up the company and protect the trustees' investments.

Meanwhile, universities have taken to guarding their intellectual property as aggressively as any business would. Traditionally, universities regarded patents and other intellectual property restrictions as standing in direct conflict with their role to disseminate information as freely as possible. But today, as a result of Bayh-Dole, most research universities have technology licensing offices dedicated to commercializing their professors' discoveries and managing the university's burgeoning patent portfolio. Of course, on its face, there is nothing wrong with this activity. But where should universities draw the line between their own commercial interests and their commitment to serve the public good?

A National Institute of Health (NIH) working group recently expressed alarm that universities are no longer freely exchanging basic research tools and reagents among scientists – even when these basic scientific building blocks have been developed with federal money – because they are aggressively laying proprietary claim to these discoveries to earn future royalties. Further, the NIH was shocked to discover that universities now impose proprietary claims on basic research tools that are as restrictive as those applied by private industry (including requirements that the university be allowed to review manuscripts prior to publication and provisions extending their ownership claims to any future discoveries). Universities, the NIH wrote, “have no duty to return value to shareholders, and their principal obligation under the Bayh-Dole act is to promote utilization, not to maximize their financial returns.”

When universities do act to maximize their financial returns, they also raise questions about their nonprofit status. Universities, after all, are tax-exempt in large measure because it is assumed they are performing certain functions that will benefit the broader public, not merely their own bottom line.

The consequences of imposing excessive proprietary constraints on information could be profound, especially in an era of expanding intellectual property claims, where there is a real need to preserve the pipeline for future discoveries. For example, a recent article in *JAMA* notes that while the total number of new gene patents has increased from 400 in 1990 to 2,800 in 1999, the universities share of gene patents has grown from 55% to 73%. Before Bayh-Dole, most of this genetics research would likely have been available for free in the public domain.

Expanding intellectual property claims are also leading some universities to clash with their own students and professors over the rights to commercially promising discoveries. In perhaps the most remarkable case, the University of South Florida filed suit against a student, Petr Taborsky, who was at work on his master's thesis. Taborsky, who had been working with his professor on a sponsored research project, claims he had received permission from his professor to pursue his own research approach. But after he discovered a commercially promising way to remove ammonia from waste water, the company and the university laid claim to his work. The university, in fact, spent ten times the original research grant on legal fees alone. Taborsky was eventually convicted of stealing university property and, under Florida law, was sent to a maximum security prison! The case rapidly turned into an embarrassing media spectacle, however, leading governor Lawton Chiles to intervene and offer Taborsky clemency, which Taborsky on principle refused.

As the Taborsky case illustrates, universities are discovering that defending their intellectual property is costly. The truth about Bayh-Dole, which no one wants to discuss, is that very few schools are actually making any money from their licensing activity. Figures from the Association of University Technology Managers reveal that a large number of schools actually spend more on legal fees to defend their intellectual property than they bring in from royalties.

However, the difficulty in turning a profit seems only to have made some schools more aggressive. Stanford University, for example, has gotten into launching its own brands (to extend the life of its royalty income beyond the life of a patent); other schools are spinning off for-profit subsidiaries, such as online-education ventures.

Skewing the Research Agenda

The final danger looms if universities do not retain their autonomy from the market – namely, that the university's own research agenda and its curriculum will become increasingly tied to the needs of industry.

At the University of California at Berkeley, many of the students and professors I interviewed expressed concerns that less commercially-oriented fields of research will languish as the university tightens relations with industry. One associate dean, who shares these concerns, pointed out that in the past decade Berkeley's world-renowned Division of Biological Control, as well as the entomology and plant pathology departments, have been downsized – or outright eliminated – while money has been poured into molecular biology and other more lucrative areas of science.

We must ask what impact this will have on our nation's research. The Division of Biological Control played a leading role in pest control in Third World countries, saving crops that are a food staple for millions of people. Although these ecological and organismic areas of science are not patentable, they clearly provide enormous public benefit.

At Stanford University, I interviewed several experts on university-industry alliances who noted that universities have historically played an essential role in the public health field as well. The pharmaceutical industry has never been interested in sponsoring research on any number of serious Third World diseases or vaccines, they pointed out, because developing nations cannot afford

to pay high prices for drugs. This is the kind of research that universities are uniquely capable of performing when they are not driven by commercial forces.

So what is really at stake here? In a recent speech titled “The Privatization of Public Universities,” Robert Berdahl, the chancellor of U.C. Berkeley, asked whether, as the research agendas of universities and industry blur, “there will be any significant investment in research that is simply in the public interest, rather than the private interest.” Berdahl, by the way, was a defender of the Novartis agreement and believes great benefits can come from university-industry collaborations. But he also fears that market values will increasingly dictate what types of inquiry the university undertakes.

This trend poses a particular threat to the humanities, where research rarely, if ever, has direct commercial value. As Chancellor Berdahl noted in his speech, “With the new capacity of some faculty – biologists, engineers, computer scientists, and business school faculty – to earn substantial amounts outside the university, there can be a corresponding devaluation of the work of humanists and social scientists.” It is worrisome, Berdahl continued, “that the great challenges posed by the advent of the new technologies . . . are fundamentally issues of ethics and public policy. Who will guide us through the moral and policy thicket of this new age if the humanists and social scientists are weakened by the overwhelming drive of market forces in a university-industrial complex?”

Berdahl is not the only one concerned about this. In a two-year national study published in the Harvard alumni magazine, two scholars, James Engell and Anthony Dangerfield, found that from 1970-1994 the number of bachelor’s degrees conferred in English, foreign languages, philosophy, and religion all declined while there was a five- to ten-fold increase in computer and information sciences. Engell and Dangerfield trace this to what they term the new “Market-Model University,” in which subjects that make money, study money, or attract money are given priority.

One school that I visited for my *Atlantic* article was George Mason University, which recently decided to boost funding in areas like computers, information

technology, and biotechnology. At the same time, degree programs in classics, German, Russian, and several other humanities departments have all been eliminated. The university’s president defended the cuts by saying that “fundlers take a dim view of giving you money to run an inefficient organization.” He notes that students are “good consumers” and they want degrees in areas where there are robust job opportunities.

Of course, universities do need to prepare students for the job market. But at George Mason, hundreds of professors and students signed a letter of protest, arguing that these cuts would undermine the university’s ability to provide a well-rounded education. Higher education, they argued, means more than training students job skills – it means teaching them to read, write, and think critically; to reflect on the world’s problems; and to obtain a broad knowledge of various subjects. It means, in short, creating intelligent, well-rounded citizens.

More broadly, there is the question of how much money universities are dedicating to teaching versus how much is going into research. From 1976 to 1994 spending on instruction declined by 9.5% at public universities while spending on research increased by 21%. Over this same period, the number of full-time faculty declined, while the use part-time faculty more than doubled.

Recommendations

In my concluding remarks, I would like to address the most important question of all: What do we do about all of this? Am I proposing that we simply turn back the clock and cut off all ties between industry and universities? The answer, I believe, is absolutely not. Erecting an impenetrable wall between universities and the commercial sector would neither be wise nor realistic. But I do believe that quite a lot can and needs to be done.

First and most importantly, I think the nation’s universities should band together and establish collective guidelines that would preserve academic freedom in all their interactions with industry. The reason these guidelines must be collective

is that, otherwise, we risk creating a race to the bottom. When one school adopts a more stringent policy on equity holdings, for example, you can't have accomplished scientists and professors running to other schools with more lenient policies.

Unfortunately, universities have not taken kindly to this idea of a collective response. In January, when the Department of Health and Human Services issued "draft" interim guidelines on financial conflicts in clinical research and presented them for public comment, leading education organizations – including the Association of American Medical Colleges, the Association of American Universities, and the National Association of State Universities and Land Grant Colleges – all wrote the HHS requesting that the guidance simply be "withdrawn." Rather than offering constructive criticism and working through the government framework, they were adamant that they should be left to develop their own policies.

But, thus far, universities have been very unsuccessful in developing conflict of interest policies to address the problems I have laid out. In a recent study published in *JAMA*, which examined the conflict of interest policies at 100 universities, researchers found little uniformity and a remarkable absence of safeguards. Only 55% of policies required disclosures of conflicts of interest from all faculty. Only 19% specified any limits on researchers' financial ties – such as equity – to companies sponsoring their work. Only 12% specified limits on delays in publication.

It is my view that universities need to do better. Here are my recommendations:

1. In line with federal guidelines, all universities should prohibit publication delays of more than 30-60 days and any other editorial constraints imposed by corporate sponsors, such as prepublication revisions.
2. Colleges and universities should require professors to publicly disclose all entities that are funding their research (as well as all related financial ties such as equity, consultant fees, etc.) on all publications, and they

should maintain a publicly accessible database where anyone can look up a professor's funding sources and other financial ties.

3. Dr. Marcia Angell, the former editor of the *New England Journal of Medicine*, recently pointed out in testimony before the NIH that institutions must also go beyond mere disclosure and must adopt policies that actually prevent professors from having direct financial ties to companies sponsoring their work. I agree and would recommend that investigators who receive grant support from industry should not be permitted to have any other financial ties to those companies (including stocks, seats on boards, etc.) These kinds of interests are not acceptable in the journalism or legal profession. Why should it be any different in academia?
4. Institutional conflicts are an equally serious problem. I would recommend that universities, themselves, be banned from investing in companies sponsoring their professors' work, as well as other start-up companies founded by their professors.
5. Universities should mandate their technology licensing offices always work to minimize proprietary restrictions on basic research tools and reagents so the basic building blocks of science continue to be shared.
6. Finally, and most importantly, universities should refuse to tailor either the research agenda or the curriculum to the needs of industry and make a stronger case for the importance of preserving public support for higher education.

In closing, I would like to stress that even on utilitarian and economic grounds, there is strong evidence to suggest that it would be foolish for universities to allow the research agenda or the curriculum to become commercially driven.

In the spring of 1999, I met with Dr. Paul Berg, a Nobel Prize winning biochemist at Stanford who was a seminal figure in the biotech revolution, having laid the

early groundwork for splicing DNA to make hybrid molecules. Berg points out that, in its early stages, all of the basic research that led to the biotech revolution was funded not by industry but by the government. Why? Because it did not appear to have any commercial promise, so industry and the venture capitalists simply were not interested in funding it.

Berg stresses that many of the most important scientific breakthroughs – including the computer-engineering revolution – resulted from public support of basic, undirected research that yielded unexpected discoveries, some of them with great commercial benefit.

So, if we allow universities to become too closely enmeshed with the marketplace, I think there is a grave risk not only to the humanities and to “public good” research and to the integrity of the scientific enterprise, but also to our economy and to our future economic growth. The university’s independence from the marketplace, in short, should not be thrown away lightly.

The Entrepreneurial University: Ethics, Values, and Mission

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“Money Changes Everything”
Cindi Lauper

Abstract

Since the passage of the Bayh-Dole Act in 1980, the amount of industry money flowing into the academy to support research has increased markedly, affecting the way research is proposed and perhaps conducted. Critics argue that the new financial interests of research faculty and university administrators are producing a culture of secrecy (vs. openness) in research, of self-promoting (vs. self-critical) research reporting, of self-interested (vs. disinterested) peer review, of using university research facilities to produce private gain (vs. public benefit), and, in some instances, even of designing research to produce desired results. In short, they argue the integrity of the academic research environment is under assault. This article explores the tensions within the university between entrepreneurship and its traditional values and mission. This issue has received insufficient debate in the academy. We need a robust debate on the role and mission of the new, entrepreneurial university.

Introduction

In the last two decades, university administrators, faculties, and sometimes graduate students, have become major players in the research and development

economy, with industry partners working through their own spin-off companies. At least \$1.5 billion from industry now flows into the academy annually (Boyd and Bero 2000). The huge sums of industry money, previously unavailable to university-based investigators, affect the way research is proposed and funded, and perhaps conducted. The main well-springs of this new money are biomedical research and biotechnology, although the money affects other areas as well.

As Acting National Institutes of Health Director Ruth I. Kirschstein (2000) recently said:

It has only been in about the last 20 years or so that substantial consulting fees or equity interests in a new company have become widely available to scientists in the biological field. It has usually been the case that researchers have hoped for a favorable outcome from their work, followed by wide recognition. But it is only recently that immediate and sometimes quite possibly substantial financial gain has also become a possibility. The world is changing, and we are not going to be able to stop the way it does.

Researchers have always labored to bring money into the university and have been honored and rewarded for doing so. But the amounts of money have increased by at least an order of magnitude over the last two decades and so have the sources. Let me illustrate this with statistics from one particularly lucrative area of current research – new drug development. “The average cost of developing one new drug is estimated to be \$300 million to \$600 million. Of the \$6 billion in industry-generated money for clinical trials worldwide yearly, about \$3.3 billion goes to investigators in the United States. Seventy percent (70%) of the money for clinical drug trials in the United States [now] comes from industry rather than from the National Institutions of Health” (Bodenheimer 2000a).

This river of new money has increased the size of university research budgets and created new opportunities and capabilities in research, teaching, and the dissemination of knowledge – the basic mission of the academy. It’s pretty hard to find university administrators who want to stop taking it.

But is the new money really supporting the basic values of the university, or does it pose a threat 1) to the integrity of the research environment and 2) to the traditional mission of the university?

The critics’ argument is that the getting and spending of this new money has created the Entrepreneurial University – or, as two recent authors have put it, “the Academic-Industrial Complex” – in which traditional scholarly values and relationships are being challenged and altered (Press and Washburn 2000). Managing entrepreneurial activity is often discussed in terms of the university managing faculty entrepreneurs. But since the senior officers of our universities are themselves active players in this drama, the question arises: Who is free enough from the magnetic pull of this new money to do the managing, and in whose interest?

What we are really talking about here is conflict of interest in the largest sense of that term. I am referring on the one hand to the “interest” the university has in its traditional values and commitments – teaching our students; free and open inquiry; disinterested peer review of colleagues’ work; dissemination of research results in the public interest, outreach, and public service. The traditional rewards for research productivity have been adequate but modest salary and, more importantly, recognition and perhaps fame.

On the other hand, critics voice concern that the new financial interests of faculty and universities are producing a culture of secrecy (vs. openness) in research, of self-promoting (vs. self-critical) research reporting, of self-interested (vs. disinterested) peer review, of using university research facilities to produce private gain (vs. public benefit), and, in some instances, even of designing research to produce desired results. In short, they argue, the integrity of the academic research environment is under assault.

These conflicts of interest are encountered daily in our universities from the individual interactions between faculty and students to the policy-making decisions by boards of trustees or regents. Perhaps because these developments are so new – Dr. Kirschstein’s estimate of 20 years is correct – or because the

allure of the money is so strong, there has been remarkably little thoughtful debate in the academy about what is happening to our culture. Such protests as exist stem from student groups, the occasional journal article, or letters to the editor.

Critical Conflict Areas

- “Stewardship” responsibilities to students, research subjects/patients.
- The integrity of research generated with industry funding.
- University life – collegiality, peer review, and the reward system.
- University funding priorities – the rise and fall of disciplines.
- University structure – new entities created by entrepreneurial activity.
- The social contract – the public’s “ownership” interest in university research.

In the remarks that follow, I will try to address both the larger questions of the impact of the new money on the academy and some of these specific foci of conflict by discussing the following:

- modern origins of academic entrepreneurship – laws, regulations, and guidelines;
- specific challenges posed by entrepreneurial activity; and
- discussion of the proposition that using entrepreneurial activity constructively will depend not only on rules and policies for managing conflict situations, but also on reconstruction of a vision of the university in the 21st century that these rules and policies will protect.

A Short History

How did the entrepreneurial university develop? We will remember that the post-Sputnik gravy train of academic funding was derailed in the 1970s by the two Arab oil embargoes and by the emergence of Japan as a then seemingly invincible economic competitor. By 1980, American universities were facing severe budget

problems that led to curtailed research programs, neglected research infrastructure and, in some cases, even dismissal of tenured faculty.

Among governmental attempts to come to the aid of the universities, none was more important than the Patent and Trademark Laws Amendments of 1980 (P.S. 96-517), enacted on 12 December of that year. This law, commonly known as the Bayh-Dole Act, permitted for the first time 1) nonprofit organizations such as universities to retain title to and market the inventions they created using federal research funds and 2) federal agencies to grant exclusive licenses for federally-owned inventions to provide more incentive to businesses. Previously, the federal government had retained title to inventions developed using its funds, but was very slow to patent and license these inventions, if it ever did at all.

The goal of Bayh-Dole was to generate money at universities through accelerated technology transfer, thereby stimulating the economy as well. Although the General Accounting Office (GAO) says “there is no database or study showing the impact specifically attributable to the act,” the impact has been profound. First, the number of licenses and options executed by universities has increased steadily since then. The Association of University Technology Managers (AUTM) reports that annual income for universities licensing their own intellectual property is in the hundreds of millions of dollars, and that university technology transfer activities generated \$34 billion in 1998 alone (AUTM 1996, 1998).

Since 1980, universities have focused themselves substantially on generating intellectual property. We have developed or expanded Offices of Intellectual Property. The number of start-up or “spin-off” companies created or joined by university-based investigators to license and develop their inventions and the number of contracts with established companies for these same purposes has increased steadily as surveys by the AUTM and GAO show.

For example, in 1998 AUTM reported that 364 start-up companies were generated that year on the basis of a license from an academic institution. Since 1980, there have been 2,578 spin-off companies created. By the mid-90s, ninety

percent of companies conducting life-science research in the U.S. had relationships with an academic institution (Blumenthal et. al. 1996).

By the late 1980s, critics were voicing concern in academic journals that the new financial interests of faculty and universities were producing a culture of secrecy, self-interested peer review, a breach of the social contract binding universities and the public and, in some instances, fraudulent research – that is, designing the experiment backwards from the desired result. In sum, these critics charge that money is corrupting the integrity of the university research environment.

It is worth remembering that it was in this first decade after Bayh-Dole that increasing concern arose about fraud in research, usually attributed to increasing pressure on investigators to produce in order to win funding or tenure. I am not suggesting a causal relationship between research misconduct and the passage of Bayh-Dole. But the concern over the integrity of the research environment is a common denominator.

Public and congressional pressure to address misconduct in research led to Public Health Service (PHS) regulations at 42 CFR 50 (1989), requiring all institutions receiving PHS funds to develop policies and procedures for investigating allegations of misconduct. NSF promulgated its own parallel regulations at 45 CFR 689 (1987, 1991).

Concerns about financial conflicts of interest in research also continued to mount, and on 11 July 1995 PHS published in the *Federal Register* the Final Rule on new Financial Disclosure Requirements at 42 CFR 50 subpart F and 45 CFR 94. These were titled, significantly, “Objectivity in Research.” In the same issue of the *Federal Register*, NSF published “Notice of Technical Changes to Investigator Final Disclosure Policy” to bring it into conformity with the new PHS regulation. Some of us remember that when this new regulation was first published for comment, it “was roundly denounced by the scientific community, academic medical centers, and universities for being overreaching, unacceptably prescriptive, and intolerably intrusive into matters that traditionally were

reserved for academic self-governance” leading to the softening of what emerged as the Final Rule (Korn 2000).

The PHS and NSF policies, as adopted, required university-based investigators applying for research support from either agency to disclose to their own institutions any significant financial interests in other entities concerned with the work. The prescribed thresholds for disclosure were \$10,000 in annual income to the investigator or the investigator’s spouse or dependent children, or \$10,000 in equity interest in the other entity. Universities were obligated under the policies to “review those disclosures and determine whether any of the reported financial interests could directly and significantly affect the design, conduct, or reporting of the research and, if so, the institution must, prior to any expenditure of awarded funds, report the existence of such conflicting interests to the PHS [or NSF] Awarding Component and act to protect PHS- [or NSF]-funded research from bias due to the conflict of interest” (NIH Guide 1995). Before the new regulations were adopted, Herman Wigodsky said that “the enormous negative response to the proposed NIH conflict of interest regulations by the scientists and institutions indicate that the affected communities have had enough of excessive intrusion into their affairs” (1993). Wigodsky also attacked for good measure “the unbelievably intrusive and destructive regulations” on research misconduct.

The Food and Drug Administration (FDA) first proposed its own financial disclosure rules in 1994. But, due in part to industry and investigator opposition, the Final Rule was not adopted until 1998.

In 2000, a new and related issue arose. Did the secrecy engendered by entrepreneurial relationships between investigators and sponsors in clinical research deprive human subjects of the opportunity to provide fully informed consent to participate in clinical trials? Department of Human and Health Services (DHHS) Secretary Shalala called the Conference on Human Subject Protection and Financial Conflicts of Interest for mid-August of last year at the Natcher Auditorium on the NIH campus in Bethesda. Interest was so strong that over 750 university administrators, officers of professional associations, industry spokespersons, and

others braved August in Washington to attend, filling the main auditorium and several overflow rooms.

The audience heard horror stories about fraudulent clinical research, publication bias and, especially, risk to human subjects posed by entrepreneurial research. Attendees also heard representatives of industry and academic professional groups argue against federal intrusiveness and for academic self-governance – the same arguments that greeted the proposed regulations protecting human subjects in the 1970s and those on research misconduct in the 1980s.

This conference had all the ritual trappings preliminary to proposed rule-making and, indeed, on 22 January 2001, DHHS published for comment, *Draft Interim Guidance on Financial Relationships in Clinical Research: Issues for Institutions, Clinical Investigators, and IRBs to Consider When Dealing With Issues of Financial Interests and Human Subject Protection*.

We have come now to a strange bend in this historical road. Clearly, the impact of entrepreneurial activity on the academy is increasing. Critics argue that the changes are, in many ways, destructive. The wave of regulations of the 1990s, designed to manage the new entrepreneurial relationships, have not been sufficiently effective to end the debate. To the contrary, there is the sense that the entrepreneurial world is evolving faster than the government's or the academy's willingness or ability to manage it. Moreover, the new administration appears to be disinclined to any regulatory solution to the problems these critics point to and may, in fact, disagree that there is a problem.

Specific Challenges

After this historical overview, let us consider the impact entrepreneurial activities have in the daily life of the universities, using some of the categories we articulated before. I propose to use brief illustrations in each case from the academic literature or brief fictionalized illustrations drawn from my experience and that of my counterparts at other universities.

Protecting students. After receiving her M.S., Rebecca was accepted in the laboratory of Dr. Zeller with a research assistantship. Dr. Zeller had funding from the university, a federal agency, and a company developing products. Dr. Zeller said he could pay for Rebecca's dissertation research with the federal money and could offer longer-term support with the company money, but she would have to sign a confidentiality agreement. Rebecca signed. After months of successful research, Rebecca proposed to Dr. Zeller that she refocus her project to pursue an exciting development stemming from a recent experiment. Dr. Zeller declined her proposal, insisting that she fulfill the specific aims the company stipulated. Rebecca complied. After Rebecca successfully defended her dissertation and sought to publish from it, Dr. Zeller told her the company had the right to review her manuscript to remove proprietary information and to determine whether any of her results were patentable – a process that could take six months or longer.

Protecting research subjects. Mary has been diagnosed with an aggressive form of breast cancer, and she is understandably terrified. Her university-based physician, who also practices in the local hospital and maintains a private office, tells her that while there is no current standard treatment of proven efficacy in a case like hers, there are some promising clinical trials in which she might choose to participate. Mary reads the consent form that states clearly that no benefit to her can be promised from this investigative therapy, but she is prompted by her physician's optimism to enroll. Later, she hears from a friend of hers, who is a nurse, that her physician receives a fee from the study sponsor for accruing patients.

Safeguarding the integrity of research. In May 2000, Thomas Bodenheimer, M.D., an internist and Clinical Professor of Family and Community Medicine at the University of California-San Francisco, published a disturbing article in the *New England Journal of Medicine* titled "Uneasy Alliance – Clinical Investigators and the Pharmaceutical Industry" (Bodenheimer 2000b). Bodenheimer both conducted interviews with investigators and drug company officers himself and reviewed for his readers related literature in the field. Everyone interested in entrepreneurship in research ought to read this article.

Bodenheimer found that 20 years ago most drug company clinical studies were designed by outside, often university-based investigators. But “now companies write the protocols and bring in outside investigators pro forma, with little intention of changing the study design.” There are well-known ways the companies can and do design their studies so that the outcome will favor their product. For example, “if a drug is tested in a healthier population (younger with fewer coexisting conditions and milder disease) than the population that will actually receive the drug, a trial may find that the drug relieves symptoms and creates fewer adverse effects than will actually be the case.

Bodenheimer found that publication of the results of these trials may be overseen by industry-dominated publication committees. “Authorship may be determined by such criteria as who participated in designing the study, who enrolled the most patients, and who has a prominent name in the field.” One investigator Bodenheimer interviewed said, “when the results favor the company, everything is great. But when results are disappointing, there is commonly an effort to spin, downplay, or change findings.”

In other instances, the investigators don’t write the articles at all. Bodenheimer reviewed several studies of the literature that found numerous instances where articles are written instead by professional medical writers (“ghostwriters”) who are not named as authors. A clinical investigator (“guest author”) who did not analyze the data or write the manuscript may be assigned authorship.

In oral presentations of this material, Bodenheimer asks his audiences at what point do these activities become research misconduct?

The Redesigned University

Once committed to the entrepreneurial enterprise, universities may feel pressure to create spin-off entities – for example, Contract Research Organizations (or CROs) that can compete successfully in the marketplace, perhaps without all the restraints of the university’s research policy. In the process, universities may

alter their own internal structures and practices. Whatever the other forces behind it, the slow erosion of tenure produces a more flexible, entrepreneurial environment.

In an article titled, “The Kept University,” published in the March 2000 issue of the *Atlantic Monthly*, Press and Washburn noted another example:

In late 1998 the University of California at Berkeley signed an agreement with Novartis, a Swiss firm producing genetically engineered crops. Novartis gave Berkeley \$25 million to fund basic research in the Department of Plant and Microbial Biology. In exchange, Berkeley granted Novartis first right to negotiate licenses on roughly a third of the department’s discoveries – *including the results of research funded by state and federal sources* as well as by Novartis. The agreement also granted Novartis two of five seats on the department’s research committee which allocates the research funds.

University Life: Collegiality and the Reward System

A recent study by Rice, Sorcinelli, and Austin (2000) finds that life for new faculty members is very different today and considerably less pleasant than it was a generation ago. The new entrepreneurial university has developed since current senior faculty began their academic careers and received tenure.

Again, I am not claiming a causal connection between the complaints of young faculty and entrepreneurial university, but there are connections worth noting. Young faculty often complain about a “managerial” culture rather than what they expected to be an academic collegial culture. And certainly the language of university administration is quite different than it was 20 years ago, much more influenced by economics and “measurable outcomes” than it was previously.

New faculty complain that tenure standards are no longer clear (some of us senior faculty would argue that they never were). Said one junior faculty member interviewed by Rice et al. (2000):

I was recruited on the basis of my serious commitments to teaching and involvement in larger social issues through my professional work, but I now know that I'm going to be evaluated on the strength of my research. This is a matter of institutional and personal integrity. I was seriously misled.

There are reports, and I suspect that some of you have heard them as I have, of tenure being held up or denied at leading universities because the candidate wasn't bringing in enough money – i.e., tenure delayed or denied not because the candidate failed to produce good research, but because he or she didn't win fat enough contracts or grants. Do university administrations admit to an explicitly economic standard for tenure? I know of none that do. This sort of alleged, implicit, economic standard for career advancement may be a new, and unfavorable, feature of the entrepreneurial university.

Conclusions

The benefits of academic entrepreneurship seem obvious: increased incentive to research productivity; the possibility of wealth for academics sufficient to keep them on campus instead of moving to industry; and new financial resources for universities to fund teaching, research, and outreach. Universities – assisted by government regulation – have acted to prevent the temptations of money from threatening the integrity of research. Openness and honesty in research are certainly core values. The principles for protecting these are now well established.

Sunshine. Most of the conflict of interest policies rest on disclosure.

Disinterested peer review. Many institutions have conflict review committees comprised of disinterested faculty members who review and recommend management techniques for real or apparent conflicts of interest in proposed research.

Special protections for students. Many institutions have developed rules so that graduate students' rights to publish their research may not be restricted by a sponsor's contract or agreement.

Institutional fire walls. The institutional official who oversees the management of entrepreneurial activities to assure research compliance and avoid conflicts of interest should be walled off from the generation or sponsorship of entrepreneurial activities.

The caveat here is that we do not know how effective these procedures are. Both the horror stories and the institutional self-congratulation are anecdotal. There are no good data that I know of on the efficacy of university and federal agency conflict of interest policy. Perhaps the regulations are too new for a good assessment. But many of us have the feeling from overseeing these regulations that there is a lot of money "flying around under the radar." Further, the entrepreneurial economy may evolve faster than the university can mount responses to it.

How big a threat is entrepreneurship to the integrity of the research environment? A similar question might be, "How much undetected research misconduct occurs in the universities? The answer is probably that it is not widespread, but that it is a significant and troubling problem.

The larger questions are: Where are universities headed? And, will the traditional mission of the university survive in the new academic economy? And, should it? These are big questions that are not being subjected to adequate debate on our campuses. One could ask whether, so far, the new economy has supported the traditional mission and social contract of the academy. And I think the answer is mixed. Disciplines and fields that promise economic return seem to be the site of new investment, while traditional courses, programs, and even departments of the traditional university – those in the humanities and some of the social sciences – are being "defunded" or disbanded.

In any event, the question of managing entrepreneurial activity begs the question – managing it for what purpose? If the answer is to manage it to protect the integrity of the research environment, then we can say that we have put mechanisms in place for addressing the problem and will know better in a few more years how well they work. The implicit presumption, of course, is that these

managerial mechanisms serve and protect the ethics, the values, and ultimately the mission of the university in the new entrepreneurial economy. But what is that mission? Until we resolve that question, our managerial mechanisms are stop-gap measures.

References

- Association of University Technology Managers, Inc. (AUTM) 1999. AUTM Licensing Survey: FY1998.
- Association of University Technology Managers, Inc. (AUTM) 1998. AUTM Licensing Survey: FY1996.
- Blumenthal D., N. Causino, E. Campbell, and K. Louis. 1996. Relationships Between Academic Institutions and Industry in the Life Sciences – An Industry Survey. *New England Journal of Medicine* 334(6):368-73.
- Bodenheimer, T. 2000a. Proceedings, Conference on Human Subjects Protections and Financial Conflicts of Interest, August 15 & 16, 2000, NIH, Bethesda, MD.
- . 2000b. Uneasy Alliance – Clinical Investigators and the Pharmaceutical Industry. *New England Journal of Medicine* 342(20):1539-1543.
- Boyd, E. A. and L. A. Bero. 2000. Assessing Faculty Financial Relationships with Industry: A Case Study. *JAMA* 284(17):2209-2214.
- Kirschstein, R. I. 2000. Perspective from the NIH. Paper read at the Conference on Human Subject Protection and Financial Conflicts of Interest, 15-16 August, at the National Institutes of Health, Bethesda, Maryland.
- Korn, D. 2000. Transcript of the Conference on Human Subject Protection and Financial Conflicts of Interest, 15-16 August, at the National Institutes of Health, Bethesda, Maryland.
- National Institutes of Health. 1995. Objectivity in Research. NIH Guide 24:25.
- Press, E. and J. Washburn. 2000. The Kept University. *The Atlantic Monthly* 285(3):39-54.
- Rice, R. E., M. D. Sorcinelli, and A. E. Austin. 2000. Heeding New Voice: Academic Careers for a New Generation. Washington, D.C.: American Association of Higher Education.
- Wigodsky, H. S. 1993. Biomedical Research: Collaboration and Conflict of Interest. *JAMA*. 269(2):290-291.

On Organizing and Leading a Graduate College: Some Lessons Learned

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Abstract

Graduate “deaning” is a role that has expanded significantly over the past decade in response to shifting demographics, technological advancements, market forces, and economic realities. The role has called for continuous improvement in service functions provided by the graduate college as well as leadership in guiding and advocating for graduate education in the university and broader community. The measure of our effectiveness is in the quality of our programs and the success of our graduates.

Background

Beginning my tenure as graduate dean more than six years ago reminded me of my first weeks as a new assistant professor: enthusiastic, eager, and relatively confident of my skills. Equally present was the bewilderment as to what a graduate dean (or a professor younger than many of her students) really “does.” Yes, I had been recognized as an able teacher, an accomplished scholar, and an effective administrator. But I wondered how these experiences would have any bearing on whatever I was expected to do or be. How did one fulfill the provost’s charge to be the “conscience of the university” and to provide quality control for graduate programs?

I was particularly attracted, therefore, to various sessions at national and regional meetings of graduate deans where the topic was the organization and admin-

istration of the graduate school. Undoubtedly, among the most helpful tools in learning about the graduate “deanery” have been these sessions led by our senior colleagues. I knew that the role would be challenging when I heard former graduate dean and now University President Steadman Upham admonish those present to watch out for their friends and to use other people’s money!

Now that I have been asked to offer my perspectives on the issues of organizing a graduate school, I’ll reflect on what our colleagues have taught me and add a few spices of my own. In doing so, it is interesting to note that some issues have remained salient for decades (such as increasing financial aid, expanding access, and promoting inclusiveness), while others have appeared more recently.

It is also important to recognize that my experience may not transfer readily to other settings. Arizona State University is one of the largest public institutions in the country and serves close to 11,000 graduate and professional students in more than 140 master’s, doctoral, and graduate certificate programs on three campuses. We have more resources and opportunities than other universities in some areas and far fewer in others. Indeed, one test of the graduate dean is compiling all the local (and usually insufficient) ingredients and concocting a palatable stew.

What is a Graduate College?

Ask practically anyone on your campus about the graduate school, and they will likely respond with puzzlement or volunteer that the graduate school does (or does not) do a good job with processing admissions and administering programs of study. The graduate school is also typically associated with providing support and encouragement for students from underrepresented groups. Beyond that, however, administrators and faculty generally underestimate the type and scope of activities of the graduate school and its contributions. It is perhaps this lack of understanding that leads to occasional questioning of the need for a graduate school in the face of tight budgets.

In most institutions, it is true, and perhaps appropriately inescapable, that the graduate college provides essential academic services to graduate faculty and programs and to graduate students (from prospects to applicants, from those offered admission to enrollees, from degree candidates to, sometimes, graduate alumni.) The operational aspects of processing applications to programs, compiling GRE and TOEFL data, collecting application fees, generating and maintaining student records and reports, promoting diversity and inclusiveness, assisting with resolution of student problems, and facilitating financial assistance are part of the “core business” of the graduate college. As well, services to graduate faculty, graduate coordinators, and administrators in providing information about and access to resources that are available to support students and programs are also part of our core business.

Universities may vary in the essential functions they assign to the graduate college. For example, Arizona State University’s Graduate College provides teaching assistant training, disburses tuition waivers, and administers about a dozen interdisciplinary graduate degree and certificate programs. Further, the graduate dean is responsible for coordinating accreditation reviews (regional and specialized) and the regents-mandated academic program reviews. These essential functions are those expected of us and generally comprise the core business of a graduate college.

It is in the fact that these functions are essential to the university that presents the challenge. The functions must happen, but where and by whom they are administered is questioned when processes are inefficient or interfere with the work of others. If, for example, processing admissions in a timely way is cumbersome and problematic, or if the units view the disbursement of tuition waivers as partial and lacking integrity, there may be immediate calls for decentralizing such activities. The most effective case for support of the graduate school is when the essential functions operate smoothly and consistently with the strategic priorities of the university. Thus, one hat of the graduate dean, a steward of resources and essential functions, is to see that the graduate college is an effective and efficient service center.

In many instances, increasing efficiency is no small feat. As one notable example, several years ago the ASU Graduate College embarked on a re-engineering project to enhance service to applicants and academic units and to bring technological advances to the admissions cycle. The project was complex and included system analyses, planning, revision of processes, acquisition of hardware and software, and substantial programming. As well, we involved dozens of staff from the Graduate College, Information Technology, Human Resources, departments, and other units, and invested substantial resources. We now have state-of-the-art graduate admissions capacity. Elements such as electronic applications, electronic communications with applicants, web-based status checking by applicants, an integrated electronic exchange with units, workflow management, and document imaging are the products from the network of partnerships we established to improve our ability to attract and enroll talented graduate students.

The question becomes, however, what does “running a smooth ship” or continuous improvement of core business functions have to do with “being the conscience of the university” or ensuring quality control? After some reflection, I concluded that to fulfill the promise of these more elusive functions, the graduate dean must embrace a second role – wear an additional hat – that of providing leadership in the university and in the community for graduate education.

The Hat of Leadership in Graduate Education

Constructing the role of leader in graduate education requires the acknowledgment that graduate deaning *is not a job*. There is no job description. Graduate deaning *cannot be described in static terms*. Whatever expectations were set yesterday, they are likely inadequate today. Graduate deaning *is a role*.

The role of the graduate dean evolves and is idiosyncratic in the university; it is constantly shaped and reshaped by the incumbent, the other players, the constituency, and the community. In my opinion, the emphasis of graduate deans has shifted rapidly over the past several years from primarily managing a service

center to providing leadership in advancing the quality of and resources for graduate education in the university community.

What are the differences that have contributed to this change in perspective and role? For one thing, there have been dramatic changes in higher education. The reality of competition among colleges and universities for more students and particularly for strong students, the proliferation of graduate programs offered through distance delivery and by proprietary institutions, and the advent and subsequent setback of the “New Economy” have all caused a reconsideration of graduate and post-baccalaureate options. New audiences for higher and post-baccalaureate education have emerged with greater attention afforded to increasing access for underrepresented students and upgrading the skills and knowledge of individuals already employed in business and industry.

Additionally, other important forces have encroached on the historical role of a graduate college. At most universities today, for instance, the primacy of undergraduate education has overshadowed the institutional pride for and generous investment in graduate education. Concern about institutional rankings in by the National Research Council or *U.S. News and World Report* has dominated considerations of budget allocations and campus priorities. These discussions become more threatening to graduate programs in the face of lower than expected revenues and public criticism of universities in retaining undergraduates and preparing them for the workforce. The financial strains of competing for top faculty and the alarmingly escalating costs for university infrastructures (including technology, capital construction, and energy) add to the challenges.

The fiscal and public support issues have become so pronounced that it is no longer the university president or chancellor alone who carries the primary burden of influencing these agendas. Indeed, virtually every college-level or higher administrator is now expected to engage various constituencies and publics in strategies to increase financial and political support for the institution.

Within that context, the graduate college and its leaders have acquired entirely new roles beyond those embraced by our predecessors. Specifically, improving

external relations, building community support for graduate education, and fund raising have notably joined our more traditional priorities on the center stage. At ASU, the creation and expansion of the Graduate Dean's Council of Advisors have signaled our firm commitment to regular and forthright exchanges with chief executive officers and community and civic leaders on topics central to graduate education in the state.

Complicating the script, however, is the fact that the constituencies of the graduate college are both internal and external to the university. Yes, we are representatives of the university in influencing external decision makers to support its functions in the face of other pressing issues such as K-12 education, crime, health care, transportation, and environment. Yet the bigger battle may indeed be the one internal to the university itself.

Graduate students almost universally report that they desire more direct mentoring and individualized career-oriented attention from faculty. At the same time, faculty are under siege to produce far more student credit hours, multiply their funded research programs, teach lower-division undergraduate classes, and justify their tenure. Moreover, it is relatively obvious to graduate faculty and graduate administrators that generous stipends, reasonable benefits, and fellowship support are sine qua non for recruiting strong graduate students and increasing the success and completion of enrolled students.

It is not obvious, however, that these outcomes are more important – or even as important – as the myriad of other urgent matters faced by those who allocate resources. After all, if it takes \$25,000 per year or more to adequately support one graduate student, a department chair or dean or provost or donor might ask: Would the money be better spent to hire an instructor to ease the burden of freshman composition, share the salary of a promising new faculty member, leverage the start-up costs of a new research star, recruit five new National Merit Scholars, or replace aging computers?

We tend to sooth ourselves by arguing that we are not in a zero-sum game, but is this really the case? How do graduate college leaders best represent graduate

students and programs when the ever more scarce human and financial resources must be shared among so many needs? At ASU, for example, the Graduate College and the Office of the Vice Provost for Research took the bold step of introducing individual health insurance for full-time teaching and research assistants. There is no question that this was the right decision. Nevertheless, committing more than \$1.7 million per year to this effort reduces our ability to support other worthwhile initiatives, like raising stipends or discounting tuition, and hardly begins to address the larger issues in supporting our talented graduate students.

The Ingredients of Graduate College Leadership

Effective leaders for graduate education – be they at the unit, institution, association, or national level – are influential in at least three major ways: they have the “big picture,” they make the case better than most, and they set the agenda and move it forward. These aspects of leadership are pertinent both to the service roles of a graduate college as described earlier and to the more elusive challenges faced by leaders within and external to the university.

The Big Picture. As the old saying goes, you can win the battle and still lose the war. The effective graduate leader knows the difference between the battles and the war itself. Identifying the overarching issues in graduate education and their place at the institution is an essential beginning for effective leadership and for organizing a graduate school to accomplish its objectives. What is graduate education at institution X? Where is it now and how does that compare to where it needs to be? What are the points of reference? The closest competitor in enrollments? The regional or segment leader in reputation? The institution that prepares the most highly sought after graduates?

There are many ways to paint the picture. Personally, I believe the most compelling yardstick is quality. That is to say, no matter how highly ranked our graduate programs may be, singly or as a whole, the most significant challenge is to build top-quality programs that issue well-prepared graduates by using wisely

the resources that can be gathered. Not a single faculty member or administrator or legislator can argue convincingly that this is a faulty aspiration. However, it is reasonable to argue that it is an empty aspiration if the leader cannot define, contextualize, or operationalize it.

What are high-quality graduate programs in the context of this institution, in this local or disciplinary community, in this region or state or world? Is there value added in high-quality graduate programs beyond quality undergraduate programs? If yes, then what is beneficial and for whom? An effective graduate leader has some preliminary answers to such questions and facilitates the engagement of students, faculty, administrators, and opinion leaders in testing and expanding them. Such questions and exploration of answers provide the foundation for positioning graduate education within the institution and among the constituent base.

As well, it is important to remember that the process of posing significant questions and proposing potential answers – in many ways the hallmark of the academy – is continuous and dynamic. The effective graduate leader stays ahead of the curve by previewing the future, anticipating new developments and issues, and serving as a catalyst to engage stakeholders in them.

Making the Case. Graduate colleges and graduate deans have a special advantage in becoming leaders in graduate education. The designation as a school, division, or college and the title of graduate dean or vice provost for graduate studies or the like provide a natural bully pulpit for advocacy. A graduate dean who does not take advantage of this special status risks yielding the opportunity to influence decision makers and coordinate efforts to create the optimal environment of quality. In our positions as graduate deans, we are *expected* to advocate for graduate students and programs. Predictably, we also become irritants when the graduate agenda gets short shrift.

Just because we are expected to advocate, however, does not ensure that we will be effective advocates. It is the way we approach this important role that makes the difference in impact. As a psychologist, I defer to the well-documented

notion that the impact of a message is strongly associated with the credibility of the agent delivering it. In the case of the graduate dean, it is not enough to have the title on the door and the credentials on the wall. Rather, we must demonstrate actively that we are among the most knowledgeable and best informed regarding graduate education matters; that we are thoughtful, balanced, and trustworthy in our considerations and decisions; and that we are articulate in our arguments and positions.

Similarly and critically, we are the representatives of the national graduate community and are in an optimal position to introduce and advance best practices in graduate education that we have gleaned from our national networks. Seeding discussions about providing more interdisciplinary opportunities for students or ensuring quality in graduate certificate programs accelerates the process of improving graduate education at the institution.

The proliferation of programs based on the Council of Graduate Schools/ Association of American Colleges and Universities initiative called Preparing Future Faculty is another example of promoting best practices. The Arizona State University's PFF program, initiated in 1994, has had a far-reaching impact on the hundreds of student participants and alumni and the more than 30 departments whose students are engaged in it. Based on our success with the PFF program, ASU developed a parallel program for doctoral students seeking non-academic careers. The Graduate College launched the Preparing Future Professionals program some three years ago. PFF has already changed the nature of the discourse within some departments about our responsibilities as graduate educators.

Making the case for graduate education within the institution and externally requires a keen understanding of the issues and a firm grip on the data and information that are relevant to the issues. It is not sufficient to be the clearinghouse for such information. Rather, effective leadership calls for culling and organizing the most relevant data and literature for timely dissemination to those who make good things happen – faculty, students, staff, and administrators.

While sharing anecdotes is often an effective tool for speeches (and for legislators and trustees!), anecdotes are not as convincing in a call for action as is specific information about the issue within the audience's backyard. For example, it is easy for any of us to cite an instance of the student who declined an offer of admission to accept a better offer elsewhere. Better yet, however, to inform your audience that largely due to inadequate recruiting packages, one of your best programs is now losing 80 percent of its top prospects, compared to 40 percent just three years ago.

Further, in the age of tying universities to the economic competitiveness of our states, we have the opportunity as graduate leaders to provide critical information to our institutional advancement and public relations people and to the external community. In this regard, graduate leaders can provide powerful information about the economic impact of increasing the number of well-prepared graduate degree holders who stay in the state, enhance tech transfer, contribute to a better quality of life, and improve education and social conditions. In my own experience, sharing such information with community leaders and members of our Graduate Dean's Advisory Council has gone a long way toward building understanding and support for what we do.

Building the Agenda and Moving it Forward. One of the privileges and leadership roles of graduate deans is to propose the broad agenda for graduate education at the institution and to enlist support for it. Perhaps in this area more than any other, it is substantially easier said than done. Central to success here is ensuring that the agenda for graduate education is consistent with the president's and provost's agendas for the university as a whole. Without the support and strong voices of the president and provost, progress is difficult. Naturally, money talks, and in most institutions, money is directed toward fulfilling the priorities of the president and provost. Enough said.

One of the remarkable and helpful maxims shared by our colleague Steadman Upham was that graduate deans do their best work through others, namely disciplinary deans and associate deans, department chairs, graduate directors, and graduate support staff. In general, it is they who have the money and people to

make things happen. By way of contrast, no graduate school will ever have enough staff to make as much progress as can be made through the combined efforts of these multiple others. Moreover, ambitious agendas like developing certain world-class programs or developing competitive support packages for top students are necessarily long term and dependent on the commitment and involvement of many individuals and groups in the university and community.

A useful strategy that I learned from Council of Graduate Schools colleagues is to establish regular meetings with department chairs and graduate directors (as well as separate meetings with graduate support staff). This is our fourth year of holding at least two meetings each semester with department and graduate heads to discuss current issues and concerns. These sessions have afforded us the opportunity to listen to and learn from each other and to formulate action plans in several areas. A very helpful outcome has been a more informed advocacy for graduate issues among a much broader leadership group. We have begun to establish similar communication with graduate student leaders, and we expect comparable mutual benefits.

In our roles we are reminded often of how much we have accomplished and how much remains to be done. Most of us are privileged to work with excellent and committed staff, all of whom have more responsibilities than they can reasonably fulfill well. To move the agenda forward, it is important to keep reminding ourselves and our staffs to set reasonable goals, focus and delimit our efforts to the extent possible, pace our activity levels, and pause occasionally to celebrate the small advances along the way. Effective time management overlaps effective organization of staff to advance the major priorities, and both comprise an aspect of leadership by graduate deans.

Early in my tenure as graduate dean, I experimented with a strategy to stretch our resources to advance a rather ambitious agenda more effectively. Like many of us, I was disappointed in the level of attention afforded to graduate students by university-wide offices. In the perpetually evolving saga of addressing inadequate financial support for graduate students, I set on a course to provide more targeted and informed services to graduate students.

Accordingly, the former director of Financial Aid and I negotiated an arrangement whereby a financial aid counselor employed by her office would be assigned to and housed in the Graduate College to assist graduate students. Over time the counselor assumed a critical role by serving as graduate expert and liaison to the senior staff meetings within Financial Aid itself. Since then, we have added a graduate financial aid manager (on the Graduate College payroll) and a support position. We now have a Graduate Financial Aid Office to develop university-wide policy under the joint direction of the Graduate College and Financial Aid.

Most importantly, three employees cannot handle one-quarter of the 44,000 students at ASU. However, the arrangement has dramatically increased understanding across campus and in Financial Aid about the special needs of graduate students, has encouraged cross-training by a large number of Financial Aid staff, has facilitated the consolidation of databases, and has allowed a graduate presence at the table during important policy deliberations.

We found the experimental partnership in financial aid to be so productive that we have replicated the model to meet other needs. We established several new positions and offices for which we split salaries and supervision with other units. These include the Graduate College Development Office(r) and the Graduate Institutional Research Office/coordinator.

We also have established many other relationships where we partner with units to achieve certain ends. These include working with:

- Office of University Evaluation on outcomes assessment for program reviews and accreditation;
- Information Technology and Continuous Improvement units to carry out an ambitious and extensive graduate admissions re-engineering project;
- Office of the Vice Provost for Research to disseminate competitive research support and conference travel awards to graduate students;
- College of Extended Education to develop distance-delivered graduate and certificate programs;
- Academic units to administer interdisciplinary degree and certificate programs;

- Office of Career Services to deliver modules in the new Preparing Future Professionals program; and
- Center for Learning and Teaching Excellence to deliver modules in the training of teaching assistants and the Preparing Future Faculty program.

Beyond partnerships of various kinds, we have extended our collaboration to a different type of resource leveraging. Specifically, we have converted virtually all financial assistance awards made by the Graduate College to a shared arrangement with the student's home unit. Thus, our top recruits receive a multiyear package that includes an assistantship and stipend from the unit, topped by tuition waivers, health insurance, and a stipend supplement from the Graduate College. Similarly, we have converted the Graduate College support programs for underrepresented students to shared arrangements with the units in the belief that it is the unit's and faculty's commitment to a student that is the essential component of the student's success.

Finally, as part of our friend-raising and outreach efforts, we have established relationships with business, industry, government, and nonprofit agency leaders. These relationships have facilitated the mutual exchange of perspectives, provided new opportunities for our students, and laid the groundwork for interesting new programmatic options.

Conclusion

Having the opportunity to serve as a graduate dean is among the greatest privileges and grandest challenges a university offers. Graduate deans have relatively no money and no real power. One can compensate for these apparent deficiencies, however, with a treasure trove of passion and good ideas and an ability to communicate and build support for them.

There is a sort of irony in holding a position as dean of a graduate college or school. Yes, in these positions we have, like other deans, the responsibility to lead and manage the human and fiscal resources of a unit. But the more stimulating and difficult aspect of our roles is serving as a voice, advocate,

representative, and leader for graduate education at the institution. When all is said and done, what really matters is whether we will have done our part to advance the quality of graduate education and to contribute positively to the careers and lives of the many talented students who selected the institutions we represent.

A National Model For Making a Multi-Institutional (Distance Education) Degree Program Work Academically and Administratively

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Abstract

The members of the Great Plains Interactive Distance Education Alliance have developed and implemented a multi-institutional distance education master's degree and a post-baccalaureate certificate program in Family Financial Planning. The Alliance has received a FIPSE Learning Anytime Anyplace Partnership grant to develop a national model for such programs. The program was initially conceived and designed by the faculty and administration of the appropriate academic departments and colleges at eight Great Plains Land Grant Universities. The graduate deans from these institutions have addressed the graduate school issues associated with delivery of the program. The chief financial officers, registrars, and continuing education deans from the participating institutions are currently addressing issues in their areas of responsibility.

Introduction

The Great Plains Interactive Distance Education Alliance (Great Plains IDEA) has collaborated to develop and implement a multi-institutional distance education master's degree and a post-baccalaureate certificate program in Family Financial Planning. Due to the unique cooperation involved in the program, Great Plains IDEA has received funding from a FIPSE LAAP (Learning Anytime Anywhere Partnership) Grant to further develop the concept into the National Model for Inter-Institutional Post-baccalaureate Distance Education Programs. Great Plains IDEA includes the Human Sciences Colleges from Iowa State University, Kansas State University, Montana State University, North Dakota State University, South Dakota State University, the University of Nebraska, Oklahoma State University, and Texas Tech University. The first six institutions listed are all participants in the Family Financial Planning master's degree program, and all eight institutions participate in the effort to develop a national model.

The Family Financial Planning degree program evolved from Great Plains IDEA faculty and administrator discussions on programmatic needs and opportunities. The student demand for such a program was well recognized by each of the institutions; however, none felt that they had the resources or faculty to deliver the entire program alone. Further, demand was recognized to be composed primarily of fully employed individuals who wanted to prepare for upward mobility within their present employment or to change professions. Few if any potential students would elect to relocate to a campus community to pursue the program or even to enroll full time. Thus, the program appeared to be particularly suited to investigate cooperative delivery online by an alliance of institutions.

The colleges identified their respective faculty members who had areas of expertise appropriate to participate in the instructional program. In most instances, each college had one or two faculty members who had expertise appropriate to the program. The faculty met and designed the curriculum for the program in consultation with the competency requirements for sitting for the certifying examination conducted by the Certified Financial Planner Board of Standards. Each individual college then identified the courses it was prepared to deliver and

assignments were made. At this time, any given course in the program is taught by only one of the participating institutions with the exception of the internship that is provided by all institutions. All students in the program, therefore, will enroll in one or more courses at each of the six participating institutions. Typically, a student will enroll in three courses including the internship at his or her home institution. The degree is awarded by the student's home institution.

Graduate School Principles of Cooperation

At this point, the graduate school deans from the participating institutions were invited to join the discussions. Clearly, a key to implementation of an academic program involving course delivery by six different institutions would be support from each of the deans and refinement of policies by all participating schools. The graduate deans were unanimously impressed and challenged by the program being proposed and were committed to resolving issues rather than erecting barriers to cooperation. At least five underlying principles for cooperation can be identified that have been central to approval of the program by the participant graduate schools.

First, the program is mutually beneficial to each institution. The program assists each department by providing increased opportunities for its faculty to interact professionally with faculty from other institutions in a cooperative, non-competitive format that will potentially lead to greater involvement in research and other collaborative activities and allows the departments to provide a requested academic program for its student clientele. Further, the program is a classic example of a synergetic system where only by combining individual resources into a cohesive system is it possible for the degree to be offered.

Second, the degree program was conceived and developed by the faculty of the participating universities rather than being the product of administrative directives. As a result, faculty support of the program was guaranteed, as it was truly their program. This in turn meant that the faculty had a natural commitment to resolve academic and curricular issues.

Third, the participating graduate schools mutually respected the academic standards and quality of all academic departments involved in the joint program. Although this level of cooperation in an academic program was new, the institutions have a long history of collaboration in research and interaction in academic and non-academic areas as a result of their proximity and shared heritage. In this particular case, all institutions are land-grant universities. Mutual respect minimized the tendency to erect barriers as a result of concerns about academic quality or reputation. In the absence of these concerns, the mutual benefits of the program are more readily seen.

Fourth, the participating graduate schools recognize that the implementation of the program at each institution may be best accomplished using the procedures and practices inherent to those respective institutions. This is perhaps one of the most important of the principles of cooperation in that it reduces the tendency to “not be able to see the forest for the trees.” For example, the participants recognized that whether the degree program is a stand alone program at one institution or a option within a program at another – or even if the degree has slightly varying titles on the different campuses – does not affect the quality of the students’ academic experience. Thus “turf” did not need to be protected on process issues. This also limited the number of approval or exception decisions that each institution had to make.

Fifth, the participating graduate schools committed to minimize, to the extent possible, the unique challenges and barriers for students that might otherwise occur in an inter-institutional distance education program. The challenges associated with admission and enrollment, transfer of credits, registration, and other procedures for the students would be potentially insurmountable in the absence of cooperation. Key to this effort was a positive supportive attitude of support staff and support offices.

Implementation Issues

The uniqueness of the collaborative effort in the program led to the funding of a grant proposal titled, “A National Model for Inter-institutional Post-bac-

calaureate Distance Education Programs,” through the FIPSE Learning Anytime Anywhere Partnership program. The grant provides the opportunity to bring together the institutional chief financial officers, registrars, and continuing education deans in addition to the faculty, academic deans, and graduate deans semiannually to address issues, adopt procedures, and resolve problems.

Through participation in the FIPSE-funded project, the graduate deans have addressed the following issues with the indicated outcomes. Each graduate school has a different policy on the number of credits that may be transferred toward a degree. However, this program would have exceeded this limitation at all institutions. The exact method of addressing this transfer credit issue varies from one institution to another, but in effect each has accepted a policy indicating that if a program and its curriculum is specifically approved as a cooperative program initially, then the approved course work in that program will not be considered to be transfer courses irrespective of which of the cooperating institutions actually delivers the course. Most institutions have a residency requirement in addition to the limitation on transfer of credit. However, the concept of residency requirements loses its meaning for an Internet-delivered program; thus, transfer of courses became the primary concept.

In similar fashion, each graduate school agreed to respect the selection processes for graduate faculty status at the faculty member’s home institution. Thus, adjunct appointment and approval of each instructor at all institutions is not required.

Admissions standards and procedures at all institutions vary in some aspects. For this program, the highest standard of any of the institutions is applied at all institutions with the exception of the requirement for GRE scores. Since essentially all students in this program are individuals who completed their bachelor’s degrees several years earlier and have been in professional settings for some time, the graduate deans unanimously recommended that GRE scores not be required and that institutions requiring the GRE for all majors reconsider that requirement. The student is only required to complete the full admission process at his/her home institution. Students are considered special nondegree-seeking

students or visiting scholars at institutions other than their home institutions. Admission to the other universities is facilitated by sharing of the essential information (with student permission) between institutions. The application fee is waived at all but the home institution.

To ensure a balance of students between institutions, each institution is allocated an equal number of slots in the program each year. This also serves to control the total number of students in the program to a level that can be handled in the academic program. A student may apply at more than one institution, but this has not yet happened.

The degree title varies from institution to institution. At some institutions, it is a stand-alone program, while at others it is an option within an umbrella program. In each case, however, the terminology of *Family Financial Planning* is in some manner incorporated into the title. The content of the curriculum is identical at all institutions. The program does not have any elective credits at this point; thus all students take the same courses.

The procedures for every process such as initial program approval, admissions, plans of study, and transcription of courses vary among the institutions. For example, some institutions were required to go to their Board of Regents for approval to grant the degree, whereas others only needed on-campus approval. In all instances, the graduate schools elected to honor the home institution's procedures as long as they did not reflect different standards for the program.

The highly supportive attitude of all graduate deans toward the program does not mean that the program has not raised difficult issues or that all of those are fully resolved. The graduate deans have identified a number of "heartburn issues" that continue to be discussed. These include scaling/scalability issues. The demand for the program appears to be large. This has led to pressures to increase the number of students that are admitted to the program each year – perhaps to a level that is greater than the faculty and other resources can effectively deliver. A second issue is the extent to which adjunct faculty should be used in the program. A third issue is the mentoring/advising capacity of the graduate faculty,

made even more problematic by advising at a distance. Subsidiary to this issue is the role of the advisory/supervisory committee in the multi-institutional setting, the relationship between student and mentors, the selection of mentors, and the expectation for the final oral and/or written examinations. Another issue is the role, if any, for graduate teaching assistants in the classroom for this program. Conceivably, a Ph.D. student from a related discipline might provide instructional support in one or more of the courses.

Finally, there are several issues relating to students in the programs who are on graduate assistantships. Certainly one institution cannot be expected to provide tuition waivers or similar benefits to students who are graduate assistants at another school, and enrollment in courses at multiple institutions complicates procedures of certification of full or half-time status for financial aid, withholding, and other issues, particularly in a semester when a student may not be enrolled in his or her home institution.

The success of a multi-institutional program is highly dependent on the buy-in of campus players other than the faculty, academic deans, and the graduate deans. The LAAP grant is allowing the program to bring together these other players. The financial officers are addressing issues such as fee structure and financial aid issues. The registrars are addressing transcribing issues and information transfer as well as workload issues for their offices for a set of processes that are difficult to automate. The role of the continuing education deans in the program varies widely among the campuses from settings where all distance courses come under their responsibility to settings where there is very limited involvement.

Summary

The program is currently admitting its second cohort of students. There is a high level of excitement for the process among the participants. At least two more degree programs are in the planning stages that will share the same multi-institutional, distance delivery approach and most, if not all, of the same participating institutions. The key to the success of this multi-institutional distance education degree program has been a vision on the part of all

stakeholders to place the success and quality of the program ahead of procedural and policy decisions that do not impact quality.

MAGS Committee Reports

Auditing Committee Report

We reviewed the statements of assets, income, and distribution, including the state of investments of the Midwestern Association of Graduate Schools for the fiscal year covering March 1, 2000, to March 1, 2001. In our opinion, the financial statements present fairly, in all material respects, the financial position of the Midwestern Association of Graduate Schools as of March 1, 2001.



Committee Members

Thomas P. Colgate, Chair, Chadron State College (2001)

Dennis L. Nunes, St. Cloud State University (2003)

Distinguished Master's Thesis Award Committee Report

On behalf of the Distinguished Master's Thesis Award Committee, I present the report of the 2001 committee selection process.

For the 2001 award, there were 40 nominated theses. The theses were sent to the eight members of the selection committee for review at their respective institutions. Each nominated manuscript was evaluated by at least three reviewers – many by four reviewers. The quality of the manuscripts nominated was excellent; many received very high reviewer scores with comments that indicated high-quality work on the part of students nominated.

This year, two awardees were to be selected. Committee members submitted scores to the chair, who arranged a conference call. In March 2001, committee members discussed the reviewers' scores and comments for the highest rated manuscripts and selected the following two recipients for the 2001 Distinguished Master's Thesis Awards.

From Mathematics, Physical, Life, and Social Sciences

James Anthony, M.S., Animal Ecology/Limnology, Iowa State University. "Growth and Longevity of Freshwater Mussels (Bivalvia: Unionidae) with Application to Their Commercial Fisheries," 2000.

Abstract. Although freshwater unionid mussels are one of the most rapidly declining components of North American freshwater biodiversity, we are faced with a considerable deficit in our knowledge of their life history and ecology. In particular, growth rates and longevity have been approached using erroneous techniques. By applying an inversion of the von Bertalanffy growth equation to mark and recapture-inferred growth rates, true ages of unionid mussels were estimated.

Apparently, mussels may reach ages much older than previously expected. With ages that may exceed a century in some populations, freshwater mussels may be among the oldest living creatures in the world. Additionally, the relationship between growth and longevity in unionid mussels and nearly 100 marine and freshwater poikilotherms has revealed that longevity, one of the most essential characteristics for conservation and management of species, may be easily estimated using mark and recapture-derived growth trajectories.

The extreme age and slow growth of these freshwater mussels may also contribute to their failure to support sustainable fisheries. Although freshwater mussel populations in the United States have been intensively exploited for over 100 years, harvests have been volatile and many mussel populations presently seem commercially unviable. The ecology of these mollusks is compatible with an Allee effect whereby exploitation may lead to decreased per capita reproduction and even extinction. These aspects of mussel ecology parallel those of many classically overexploited species, and the Allee effect may be more common than previously expected in exploited populations.

From Arts and Humanities

Shirley McKamie, M.A., Truman State University. "Three Cubist Portraits: An Examination of the Related Aspects of Time Manipulation and Amoralism Within Gertrude Stein's Word Portrait "Picasso" (1909), Pablo Picasso's Portrait of Daniel-Henry Kahnweiler (1910), and Igor Stravinsky's Portrait of a Peasant Bride in the First Tableau of *Les Noces* (1917), 1999."

Abstract. Albert Einstein's Special Theory of Relativity was published in 1905, and Pablo Picasso's cubist masterpiece, *Les Femmes d'Alger*, was finished in 1907. The change from Newtonian to Einsteinian physics provided early cubists with a rationale for denying a representation of the world based on social convention and Renaissance perspective. The

philosophy behind the cubist movement allowed artists to create works they deemed to be amoral because the Victorian sensibility of "what is beautiful is good" no longer applied within this new context.

They postulated that, within the fourth dimension of time, there exists an unchanging ultimate reality which they described as the "eternal act of becoming."

The prolongation of the present is the concept that unites all three works chosen for this study. Stein, Picasso, and Stravinsky were fascinated by the artist's manipulation of time, and the ways they achieve "interior time" within their art are strikingly similar in conception.

Both award recipients have written scholarly documents that are a credit to them and to their institutions. The committee was pleased to make the awards official at the 2001 Midwest Association of Graduate Schools spring meeting in St. Louis, Missouri.

Respectfully submitted,
Gail Scukanec, Chair
Associate Dean, College of Graduate Studies
Central Michigan University



Committee Members

Gail Scukanec, Chair, Central Madison University (2002)
Deborah Balogh, Ball State University (2002)
Maria DiStefano, Truman State University (2002)
Tony Filipovitch, Minnesota State University, Mankato (2002)
Peggy Harrell, University of Southern Indiana (2002)
Jolyn Kuhlman, Indiana State University (2003)
Ken Nikels, University of Nebraska at Kearney (2003)
Marilyn Orion, Michigan Technological University (2002)

Graduate Standards Committee Report

Proposal

To investigate how master's institutions could become more involved with Preparing Future Faculty (PFF) programs hosted by doctoral-granting institutions. For the purposes of this proposal, "involvement" in PFF programs is defined by the following list of exemplary activities.

- The facilitation of the development of professional relationships between disciplinary faculty from master's- and doctoral-granting institutions is given priority.
- In addition to academically preparing students for doctoral studies, institutions must see that master's students are prepared to "seamlessly" enter doctoral programs – including preparing them to assume teaching and research assistant positions.
- The possibility of engaging in concurrent admissions agreements between master's and PFF/doctoral institutions would allow master's students to apply for concurrent admission to a specific doctoral program. These students, upon admission to both institutions, will be afforded an opportunity to begin doctoral studies immediately upon completion of their master's degrees. (Note: Conditions may also be stipulated, e.g., minimal GPA, etc.).
- It is recommended to develop appropriate standards for professional development in master's degree "partnership" programs.

To pursue this initiative further, the MAGS Graduate Standards Committee recommends developing a panel discussion for next year's conference. A cross-section of panelists from MAGS institutions would discuss the development of standards to expand PFF programs to incorporate master's degree institutions as partners in this professional development program.

The Graduate Standards Committee also recommends inclusion of two related topics in next year's program.

- A program to discuss issues of conditional admissions procedures. The objective would be to define how graduate schools can accommodate students pursuing master's degrees who have deficiencies or are under-prepared for graduate studies. Individuals from some student populations (e.g., K-12 teachers) might be required to pursue a master's degree but might not meet the requirements for unconditional admission to graduate school. The issue at hand is to define how best to serve such populations while maintaining graduate standards.
- A program to determine if graduate educators should develop a Preparing Future Professionals program designed to assist students with their professional development, specifically for those students choosing to pursue careers outside of academia.



Committee Members

Tim Downs, Chair, Emporia State University (2002)
 William Clark, Ohio State University (2001)
 Charles Dye, University of Akron (2001)
 Suzanne Ortega, University of Missouri (2002)
 Patrick Melia, Eastern Michigan University (2003)
 Robert Johnson, Miami University of Ohio (2003)

Membership Committee Report

The Membership Committee has received inquiries for MAGS membership from several institutions since the meeting last year. Application materials were sent to Grand Valley State University (MI) in November 2000, Chicago State University (IL) in November 2000, Drury University (Missouri) in November 2000, and Dakota State University (SD) in March 2001. Drury University (MO) has completed the application process and was recommended for membership in MAGS at the April 17, 2001 meeting. None of the other applications are complete at the present time.

In addition, the application from Rockhurst University (MO) was completed last year and has been reviewed. They were recommended for membership in MAGS at the April 17, 2001 meeting. That brings the membership of MAGS to approximately 148 institutions, assuming that no institutions have been lost since last year. A current membership listing, the constitution, and an institutional application form are available on the MAGS website at:

[HTTP://www.unl.edu/gradstud/mags/magshome.html](http://www.unl.edu/gradstud/mags/magshome.html)

Respectfully submitted,
David A. Crouse, Ph.D.
Membership Chair



David Crouse, Chair, University of Nebraska Medical Center (2002)
Arthur Bacon, Concordia University (2001)
Dale Good, Walden University (2003)
Margaret Coxwell, Northern State University (2003)

2001 MAGS Member Institutions

Illinois

Bradley University
Concordia University
DePaul University
Eastern Illinois University
Illinois State University
Institute for Clinical Social Work
Keller Graduate School of Management
Loyola University of Chicago
Loyola University of Chicago Medical School
National-Louis University
Northeastern Illinois University
Northern Illinois University
Northwestern University
Roosevelt University
Rush University
Southern Illinois University at Carbondale
Southern Illinois University at Edwardsville
The University of Chicago
University of Illinois at Chicago
University of Illinois at Springfield
University of Illinois at Urbana-Champaign
Western Illinois University

Indiana

Anderson University
Ball State University
Butler University
Indiana State University
Indiana University
Indiana University-Purdue University –
Indianapolis
Purdue University
Rose-Hulman Institute of Technology
University of Indianapolis
University of Notre Dame
University of Saint Francis
University of Southern Indiana

Iowa

Iowa State University
Maharishi University of Management
University of Iowa
University of Northern Iowa

Kansas

Baker University
Emporia State University
Fort Hays State University
Kansas State University
MidAmerica Nazarene University
Pittsburg State University
University of Kansas
University of Kansas Medical Center
Wichita State University

Kentucky

Southern Baptist Theological Seminary
University of Kentucky

Michigan

Andrews University
Calvin College
Central Michigan University
Davenport University
Eastern Michigan University
Kettering University
Madonna University
Michigan State University
Michigan Technological University
Northern Michigan University
Oakland University
University of Michigan
Wayne State University
Western Michigan University

Minnesota

Bemidji State University
 College of St. Scholastica
 Minnesota State University, Mankato
 Minnesota State University, Moorhead
 Mayo Foundation
 St. Cloud State University
 Saint Mary's University
 Southwest State University
 University of Minnesota Twin Cities
 Walden University
 Winona State University

Mississippi

Mississippi State University

Missouri

Central Missouri State University
 Northwest Missouri State University
 Rockhurst University
 Saint Louis University
 Southeast Missouri State University
 Southwest Missouri State University
 Truman State University
 University of Missouri - Columbia
 University of Missouri - Kansas City
 University of Missouri - Rolla
 University of Missouri - St. Louis
 Washington University in St. Louis
 Webster University

Nebraska

Chadron State College
 Creighton University
 Peru State College
 University of Nebraska at Kearney
 University of Nebraska at Omaha
 University of Nebraska-Lincoln
 University of Nebraska Medical Center
 Wayne State College

North Dakota

Minot State University
 North Dakota State University
 University of North Dakota

Ohio

Air Force Institute of Technology
 Ashland University
 Bowling Green State University
 Case Western Reserve University
 Cleveland State University
 Hebrew Union College - Jewish Institute of
 Religion
 John Carroll University
 Kent State University
 Medical College of Ohio
 Miami University
 Notre Dame College of Ohio
 Ohio University
 Notre Dame College of Ohio
 The Ohio State University
 University of Akron
 University of Cincinnati
 University of Dayton
 University of Toledo
 Ursuline College
 Wright State University
 Xavier University
 Youngstown State University

Oklahoma

Cameron University
 Oklahoma State University
 Southeastern State University
 Southwestern State University
 University of Central Oklahoma
 University of Oklahoma
 University of Oklahoma Health Sciences
 Center
 University of Tulsa

South Dakota

Northern State University
 South Dakota School of Mines
 South Dakota State University
 University of South Dakota

Texas

Baylor University
 Texas Tech University

Wisconsin

Concordia University
 Marquette University

Sacred Heart School of Technology
University of Wisconsin - Eau Claire
University of Wisconsin - Green Bay
University of Wisconsin - La Crosse
University of Wisconsin - Madison
University of Wisconsin - Milwaukee
University of Wisconsin - Oshkosh
University of Wisconsin - Platteville
University of Wisconsin - River Falls
University of Wisconsin - Stevens Point
University of Wisconsin - Stout
University of Wisconsin - Superior
University of Wisconsin - Whitewater

Publication Committee Report

The primary charge of the Publication Committee is oversight of the preparation of the *Proceedings of the Midwestern Association of Graduate Schools*. Frank Einhellig has been the editor for the past several years. During the past year, manuscripts were received from presenters at the April 25-28, 2000 meeting, these manuscripts were reviewed and edited, and the *Proceedings of the 56th Annual Meeting* was assembled. The printing cost from Central Printing Company, Springfield, Missouri, was \$1535 for 250 copies. The *2000 Proceedings* was smaller than the previous year, containing 150 pages. It was mailed to all who registered for the 2000 meeting as well as the dean for each member institution. An archival copy was delivered to the Council of Graduate Schools office in Washington, D.C. We also have provided several copies to libraries making a request, and some were given out at the 57th Annual Meeting. In the interest of having an even broader impact on those interested in graduate education, the *Proceedings* can be found on the Southwest Missouri State University website. Electronic access to the *1998 Proceedings* and *1999 Proceedings* is also available. The web address is <http://www.smsu.edu/mags>.

We trust you have spent some time pursuing articles of the *MAGS 2000 Proceedings* and found them interesting reading. It includes ten main articles, two workshop summaries, five committee reports, and instructions to contributors. The *MAGS 2000 Proceedings* had fewer pages than the prior year because several of those presenting at the annual meeting chose not to submit a manuscript for publication. Hence, in the interest of having a more complete record of the 56th Annual Meeting, the *MAGS 2000 Proceedings* includes a new feature – a section listing titles and authorships for meeting presentations that were not submitted for publication.

Each of the last three years the Publication Committee has discussed recommending that MAGS eliminate the paper copy of the *Proceedings* and simply rely on the electronic version. However, once again the committee has concluded that there exists a need for the hard copy edition, and we suggest that it continue

to be published. The editorial and work of preparing the *Proceedings* is about the same even if the hard copy version were to be eliminated. The uncertainty of the long-term availability of the electronic format for the *MAGS Proceedings* has a role in our recommendation to continue the printed version.

For next year, there will be a transition of the editorship from Frank Einhellig to Harry Berman, University of Illinois at Springfield, and some responsibilities will be shared. Either of us will be happy to receive manuscripts from the 57th Annual Meeting in St. Louis. Further, when the *MAGS 2001 Proceedings* is complete, we anticipate adding it to the same website we have been using. Hopefully, this will minimize confusion.

Respectfully submitted,
 Frank Einhellig, Chair
 Associate Vice President for Academic Affairs and Graduate Dean
 Southwest Missouri State University
 Springfield, MO 65804
 FrankEinhellig@msu.edu



Committee Members

Frank Einhellig, Chair, Southwest Missouri State University (2001)
 Joseph Bast, University of Kansas Medical Center (2001)
 Harry Berman, University of Illinois at Springfield (2002)
 Edie Raleigh, Madonna University (2002)
 David Hilderbrand, South Dakota State University (2003)

Treasurer's Report for FY2000 (Period Covered: March 1, 2000 to March 1, 2001)

Assets 3/1/2000

Checking Account	\$24,125.35
Money Market Mutual Account	7,851.80
Certificates of Deposit	32,354.61
Total Assets	<u>\$64,331.76</u>

Revenue 3/1/00 – 3/1/01

Registration Fees for the 2000 Meeting	\$14,465.00
Late Membership Dues for 2000	2,425.00
Membership Dues for 2001 (Billed 11/1/00)	14,400.00
Interest From:	
Checking Account (First Federal, Lincoln, NE)	444.33
CD#1 (First Federal, Lincoln, NE, 03-00021024)	534.99
CD#2 (First Federal, Lincoln, NE, 03-00021162)	526.37
Money Market (First Federal, Lincoln, NE 01-00007905)	431.72
Total Revenue	<u>\$33,227.41</u>

Disbursements 3/1/00 – 3/1/01

2000 Annual Meeting Program Expenses	\$21,453.67
Executive Committee Dinner (2000 Annual Meeting)	1,183.61
2000 Annual Meeting Presenter Reimbursements	2,958.46
2000 Annual Meeting Executive Committee Expenses	1,032.68
2000 Summer Meeting Expenses	1,648.20
LaPidus Endowment Donation	1,500.00
December Executive Committee Breakfast Meeting	189.22
Miscellaneous	634.01
Total Expenses	<u>\$30,559.85</u>

Assets 3/1/2001

Checking Account	\$24,171.19
Money Market	10,433.52
Certificates of Deposit	32,354.61
Total Assets	<u>\$66,959.32</u>

Note: MAGS has three certificates of deposit with First Federal, Lincoln, NE.

<i>Principal</i>	<i>Maturity Date</i>	<i>Interest Rate</i>	<i>Value at Maturity</i>
\$10,000.00	10-23-01	6.00% APR	\$10,000.00 (monthly interest)
\$12,354.61	07-30-01	6.50% APR	\$13,034.84 est. (annual interest)
\$10,000.00	04-25-01	5.25% APR	\$10,000.00 (monthly interest)

[signed]

Merlin P. Lawson
Secretary/Treasurer

April 11, 2001
Date

Titles and Authorships of Presentations Not Submitted for Publication

“Policies on Ethical Issues in Graduate Education”

Mark L. Brenner, Vice Chancellor for Research and Graduate Studies, Indiana University-Purdue University–Indianapolis and Jerry Zar, Associate Provost and Dean, Northern Illinois University

“The Role of the GRE Tests in Widening Access to Graduate Education”

Ladelle Olion, GRE Chair of Minorities in Graduate Education Committee, Fayetteville State University in North Carolina; Bob Thach, GRE Board Chair-Elect, Dean, Graduate School of Arts and Sciences, Washington University in St. Louis; and Pat Swan, GRE Board Chair, Iowa State University

“Ethical Challenges – Working with Donors”

Virginia Henshaw, Dean of the Graduate School and Senior Research Officer, University of Wisconsin – Madison

“Ethical Challenges – A Federal Perspective”

John Vaughn, Executive Vice President, Association of American Universities

“Experiences of Faculty”

William Wold, Chair, Molecular Microbiology and Immunology, St. Louis University Medical School and Garland Marshall, Professor of Molecular Biology and Pharmacology, Washington University in St. Louis

Instructions to Contributors to the Proceedings of the Midwestern Association of Graduate Schools

Proceedings Editor

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Adherence to the submission schedule and instructions on how to submit your manuscript is essential to the timely publication and distribution of the *Proceedings of the Midwestern Association of Graduate Schools*. In addition, continuity in style and form are central to the appearance of any publication of articles. These guidelines have been developed to help achieve that goal of consistency and yet allow for freedom and presentation for the array of topics that constitutes the *Proceedings*.

The *Proceedings of the Midwestern Association of Graduate Schools* contains the text of presentations at the annual meeting, MAGS committee reports, summaries of small-group discussions, and other items of concern as appropriate to support the goals of the organization. Authors should be aware that the text of a manuscript may need some modifications for clear communication as a publication in the proceedings. They should revise the manuscript to be appropriate for publication. The *Proceedings* does not act as a general publication outlet nor does it accept unsolicited manuscripts.

How to Submit Your Manuscript

Submission. Presenters should provide materials for publication to the following two people.

- Chairperson who organized and presided over the meeting section of the presentation (paper copy at the annual meeting, email attachment later)
- *Proceedings* editor (paper copy and email attachment)

Annual meeting committee reports and summaries of small-group discussions should be submitted (paper copy and email attachment) directly to the *Proceedings* editor. Guidelines for small-group facilitators are provided as the last section of these instructions to contributors.

Format. Manuscripts should be in Microsoft Word format (.doc) or rich text format (.rtf). PowerPoint or similar presentations are not acceptable.

Review of the manuscripts. The section chairperson will conduct a first review and editing and forward those comments to the editor. The Publications Committee will complete the review and editing process.

Time Table. Manuscripts of presentations should be presented to the section chair at the time of the annual meeting. Manuscripts and reports should be received by the editor no later than 30 days following the annual meeting.

Manuscript Preparation

This publication can serve as an example of how materials presented for publication should be prepared. However, the general guidelines are as follows:

Title	Keep the title to a few key words, typically 10 or less.
Authorship	Provide your name, title, institution, address, and email address.
Abstract	The first section should be an abstract of no more than 100 words.
Line spacing	Single space.
Paragraphs	Double space between paragraphs; do not indent.
Headings	Use of headings is encouraged, but should not exceed two levels. Left justify headings and bold.
References/citations	<i>Chicago Manual of Style</i> documentation style. Your references must be complete; if not, you will be contacted to provide the missing information. The editor cannot complete your references or verify them for accuracy.
Length	Ten single-spaced pages is the maximum length anticipated.
Figures/artwork	Graphs/figures developed using Microsoft Office are acceptable. Otherwise, provide clean, camera-ready copies that can be photocopied directly into the <i>Proceedings</i> .

Small-Group Facilitators

The following guidelines apply to interactive meeting sections that are under the direction of a small-group facilitator, who is responsible for formulating key questions for discussion, moderating the discussion session, and providing a written summary for the *Proceedings*. After the title and authorship (facilitator), the manuscript presented to the *Proceedings* should start with a statement of the topic and a bulleted list of four to six questions that served as the focus of the discussion. These elements should be followed by a concise summary (250-500 words) inclusive of the salient points, comments, or questions that arose during the group discussion. If desired, references can be included in a standard reference list according to the format specified for other manuscripts in the *Proceedings*.

