An Interim Report:

The University's New Five Year Planning Process

No one can know with certainty the challenges the future holds for the world of learning. We do know, however, that by defining the University's ambitions and priorities we better prepare Penn for the future. This academic planning helps foster the climate of inventiveness on which good teaching and research depend. In 1982, President Hackney recognized the value of intensive planning and committed the University to such efforts. The result was *Choosing Penn's Future*, which established the University's planning priorities for the 1980s.

Last fall we began a new phase of our academic planning process. Our goal is to think through what the University's planning priorities should be for the 1990s. To begin that process, we created seven University-wide faculty working groups and three subcommittees as follows: undergraduate education, admissions, financial aid, advising and retention, graduate (Ph.D.) education, professional education, research, faculty development, the academic information environment, and international dimensions. Each group was asked to focus on three questions:

What are Penn's ambitions in each area?

What efforts currently exist?

What programs will permit the University to achieve its ambitions?

The initial charges to the groups were published in *Almanac* on November 8, 1988.

The working groups and subcommittees have met intensively throughout the fall. Some were able to build on work previously accomplished and are further along than others, as you will see in their interim reports below. We would like your comments on these reports. Your ideas and reactions will be most helpful to the working groups as they proceed during the spring semester both to develop recommendations and strategies for their implementation and to prepare their final reports for submission to the Academic Planning and Budget Committee.

We expect to publish these final reports in *Almanac* as well, either by the end of the current academic year or by the beginning of the fall semester. During the fall of 1989, the Academic Planning and Budget Committee will review these final reports, as will the Council of Deans. The reports and the review will then be the basis for a draft planning paper that draws together the individual proposals into a coherent five year plan for the University.

Your comments should be addressed to the chairs of the respective working groups (a list of the members of each working group accompanies its report); it will be most helpful if the chairs receive your comments by March 20, 1989. Thank you in advance for your careful consideration of these reports.

Sheldon Hackney, President   *Michael Aiken, Provost*

An Interim Report:

The University's New Five Year Planning Process

Reports of the Working Groups and Subcommittees

Comment may be sent to the chairs of the
individual working groups and subcommittees
at the addresses given on page XVI.

Undergraduate Education

The Undergraduate Education Working Group has reviewed recent progress in undergraduate education, both within each of the undergraduate schools and University-wide. This review identified areas of major accomplishment, as well as some areas that called for continued and/or enhanced efforts. Special emphasis is particularly needed in those areas most directly related to the vision of Penn as "One University."

Recent Developments in Undergraduate Education

The Working Group's assessment of the current status of undergraduate education at Penn can be summarized as follows:

1. All the undergraduate schools have made substantial curricular and financial commitments to the centrality of the liberal arts in undergraduate education.

2. Substantial and growing curricular commonality exists in the area of general education, a trend greatly fostered by the recent curricular reforms in SAS.

3. A strong emphasis on communicative competence exists throughout Penn's undergraduate programs.

4. There is strong interest and some movement towards strengthening the international dimension of the undergraduate experience at Penn—an important commitment that will, we believe, be greatly enhanced by the current planning effort in this area.

5. Limited progress has been made towards promoting an understanding of the role of research among students and making the research environment a more integral contributor to the undergraduate educational experience.

6. Recent efforts to institutionalize considerations of teaching excellence in promotion and tenure decisions, and to ensure the qualitative uniformity of undergraduate instruction, evince a clear commitment to the fundamental importance of superior undergraduate instruction. However, more needs to be done.

7. Over the past decade, Penn has achieved relative success in strengthening and diversifying its undergraduate student body—areas in which further efforts are under consideration by the planning subcommittees on admissions and on retention and advising.

8. Penn has achieved mixed results in the integration of liberal arts and professional education, and in fostering an ability among all undergraduate students "to see life whole."

Clearly, efforts should continue in all of these areas. However, the working group believes that a major focus on those areas that tend to further the realization of the vision of One University offer the greatest promise and will also promote continued progress in the other areas.

The interests, careers, and personal activities of most students, both while at Penn and in later life, are shaped in large measure by the students' professional aspirations and roles. As a result, the undergraduate experience at Penn is dominated by students' identification with a particular school or profession. This is not necessarily a bad thing. Indeed, the Working Group views Penn's quadripartite undergraduate structure not as a problem to be overcome, but as an opportunity to create a truly unique and special undergraduate experience, integrating traditional liberal arts and professional disciplines and perspectives—an ambition embodied in the concept of One University.

One University

The concept of One University originated in 1973, when the University Development Commission articulated a singular and compelling vision of the University of Pennsylvania's uniqueness as an academic institution:

> The concept of *One University* is based on the conclusion that our greatest potential strength and uniqueness lies both in our historic linkage of professional education with the liberal arts and sciences, and in our contemporary advantage of the close physical proximity of our schools on one campus. The key to the philosophy underlying the concept is the thought that the University of Pennsylvania should be an institution which sees life whole. To see life whole means to be concerned with the past, the present and the future, to see root causes of the condition of the earth and man, and to see the condition itself both in its obvious and in its more subtle and immanent characteristics.

The Commission's subsequent calls for enhanced interaction between professional disciplines and the arts and sciences and its emphasis on the "living-learning" environment have been the guiding themes of much of the progress and planning in undergraduate education during the intervening fifteen years. However, the heart of the One University concept, the Development Commission's call to "see life whole," remains largely unfulfilled, and it therefore serves as an appropriate keynote to the Working Group's vision of the undergraduate experience at the University of Pennsylvania.

A Fifth Force

It is the Working Group's view that the goal of "seeing life whole" will only be attained when it is effectively institutionalized with sufficient concreteness to ensure that implementation follows rhetoric. Clearly, no one school can achieve this. Likewise, experience has shown that the internal dynamics and priorities of the individual schools are too strong—and too diverse—to permit the schools operating collectively to achieve this aim. Finally, it would be inappropriate for the Provost to attempt to achieve them by administrative fiat. Thus, there remains a need for a "fifth force" in undergraduate education, a locus, focus, and facilitator of the kinds of initiatives that have failed to reach fruition in the past and that would foster greater cohesion throughout the undergraduate experience.

Almost unnoticed, such an instrument (there may be others) has gradually begun to emerge. The College House system and other associated initiatives in the residence halls have, over the past decade especially, begun to fulfill in a small way the desire of both faculty and students for interdisciplinary, cross-school, and other "common" experiences, and for an environment rich in intellectual excitement, cross-fertilization, and opportunities for engagement. It is the Working Group's view that a major effort should be undertaken to bring this trend to the center of the undergraduate experience. While four undergraduate schools would remain, with their individual curricular prerogatives, the aptly title "living-learning" environment would, in cooperation with the individual schools, promote academic activities that fall between and among them, and would add its own important contribution to the undergraduate experience of every Penn student.

The Intellectual Environment

The intellectual environment created on a university campus is *not*, in our view, just the setting in which academic work takes place. Rather, it is the prototype for the kinds of lives a school's students will be prepared to lead after graduation. Thus, proposals for the development of the intellectual environment must not be confused with cosmetic improvements to residences or reduced to merely physical and architectural changes in facilities, necessary as these may be. What is needed is far more radical:

We must ensure that, while at Penn, a wide-ranging intellectual engagement is the anticipated, desired, and fully realized norm for every undergraduate student.

To realize such a conception of the undergraduate experience at the University of Pennsylvania will require a significant rethinking and strengthening of much of the co-curricular activity and resources that already exist. On the other hand, this realization should *not* require any diminution in the prerogatives of the individual schools or their respective faculties. It *will* require that the residential system take on this mission as its explicit and preeminent purpose, in essence, subjecting residential operations (including dining and facilities matters) to *academic* goals.

The Working Group will develop specific recommendations on these and other elements of its vision in the months ahead. While the Working Group sees the intellectual environment as the central current issue in undergraduate education at Penn, it will also be reviewing a variety of other educational issues, including the quality of undergraduate instruction, academic honors, undergraduate research opportunities, optional core curricula, and the role of "capstone" experiences in the undergraduate major. Though some of these may seem unrelated to our central concern with the intellectual environment, the Working Group strongly believes that the goal of "seeing life whole" can only be realized if that environment is a reflection of the academic programs of the undergraduate schools, and that unforeseen relationships will, no doubt, emerge in the course of further discussion.

In the meantime, the general themes that will guide the Working Group's specific recommendations are already clear:

1. Subordinate, both administratively and programmatically, the residential and co-curricular aspects of campus life to the academic and intellectual ambitions of undergraduate education at Penn.

2. Redefine the mission and goals of the residential system as the creation and development of an intellectual environment where fluid interaction, intellectual engagement, and a broad, interdisciplinary perspective will flourish.

3. Continue to stress the autonomy of the faculties of each undergraduate school, and their responsibility for both the content and quality of their undergraduate curricula. At the same time, encourage greater attention on the part of the Deans and faculties to the programmatic and university contexts in which undergraduate education takes place.

4. Further define Penn's notions of "quality in teaching" and "curricular reform" in ways that directly promote faculty-student interaction and intellectual engagement (especially in the freshman year), particularly in the residential setting.

Only a consistent, long-term, institutional change—both at the Provostial level and within every school and department—will eliminate the perception that in tenure and promotion decisions research concerns far outweigh teaching performance and involvement with undergraduate students. Such changes will ensure that Penn's rhetoric regarding undergraduate education is matched in reality. Continued efforts in this direction are essential, both to encourage greater faculty participation in the intellectual life of students and to link more effectively the intellectual life of the campus with academic programs.

5. Explicitly charge the Deans of the undergraduate schools and the residential system (perhaps through the Provost's Council on Undergraduate Education and the Council of Faculty Masters) with the continuing task of cooperatively developing and advocating, for consideration of the respective undergraduate school faculties, educational options that will produce the kind of intellectual environment we envision.

Such initiatives might include new dual-degree options, cross-School majors and minors, interdisciplinary course clusters and programs, an optional core curriculum, enhanced honors study opportunities, community service opportunities, integrative or "capstone" courses, and a variety of other curricular enhancements.

In this context, expansion and better integration of coherent international studies programs—which are the subject of a separate working group's consideration—are of special and timely importance to the undergraduate schools and a primary example of the kind of potentially integrative and dynamic intellectual, social, and professional experience that the Committee seeks to foster.

6. Begin planning for appropriate long-term development of the residential system to provide—through diverse settings and facilities—an enhanced intellectual experience for all undergraduate students, including those who choose to live off campus. These plans may require, over the next ten to twenty years, physical expansion of the residential system and related resources, such as the new student center, in order to house all students desiring University housing, to provide room for greatly expanded academic and administrative activity in residences, and to continue the current progress in upgrading and renovating existing facilities.

7. Locate significant numbers of faculty offices, graduate students, seminar rooms, University offices, advising resources, and other appropriate activities—clustered around common interests, activities, or functions—in residential settings in order to create the fluidity of interaction among faculty, students, and staff that is essential to creating a One University environment for undergraduates.

8. Continue renovation of the residential system (specifically including Harrison House), along the lines already implemented in portions of the Quad and other residences, to provide a range of the following resources and facilities to all undergraduates: privacy, residentially based academic advising, faculty and graduate student presence, continuous interactions with academic programs and University offices, the experience of population diversity, and access to common spaces and dining facilities that promote interaction.

9. Provide access to comparable experiences and opportunities for students who choose to live off campus and encourage their continued integration into the intellectual environment of the campus. Specific means to this end include the creation of satellite facilities in University-owned buildings in West Philadelphia, electronic networks, and the incorporation of the Committee's vision of the undergraduate experience into current planning for a new student center.

We believe that a residentially based intellectual environment developed along these lines would stamp Penn with the sort of real uniqueness that the One University concept first articulated as an ideal. We believe that it may be the only way—certainly, it is the least disruptive and tendentious—in which Penn's own special vision of the undergraduate educational experience can be realized.

During the remainder of the Working Group's tenure, we hope to chart a realistic and concrete path to guide those who may be charged with making that vision a reality. We welcome the suggestions and reactions of every member of the University community, including faculty, students, staff, alumni, and parents.

David Brownlee, Arts and Sciences, *Chair*
Norman Adler, Arts and Sciences
Ivar Berg, Arts and Sciences
Daniel Bogen, Engineering
Randi Cohen, SCUE
Marvin Lazerson, Education
Robert Lucid, Arts and Sciences
Kim Morrison, Vice Provost for University Life, *ex officio*
Mary Naylor, Nursing
Marion Oliver, Wharton
Richard Paul, Engineering
David Pope, Engineering
Susan Wachter, Wharton
David Williams, Arts and Sciences

Subcommittee on Admissions

Introduction

In recent years Penn has established itself firmly as one of the most competitive and selective undergraduate institutions in the country. There has been a substantial increase in the size, academic strength, and diversity of both the applicant pool and the student body.

In the early 1960s, applications to Penn totalled about 5,000 and matriculations about 1,400 each year. Ten years later these numbers were approximately 7,500 and 1,900. The last decade has seen enormous growth: Applications have reached 13,000 annually and matriculations 2,250. At the same time as these figures have risen, major changes have taken place on campus.

It is important to ask some questions in view of this growth:

Has Penn been enrolling the types of students it wants?

Have academic programs and the general campus environment changed to accommodate the rapid and substantial growth in the size of the student body?

What types of students does the University want to attract in the future, and what must it do to succeed in enrolling them?

Should the steady upward trend in the size of the undergraduate student body be arrested, or even reversed?

To a great extent Penn's success in developing a large and strong applicant pool has been achieved because of successful marketing and the fact that much of the college-bound population seeks to attend a top-flight institution. Major new initiatives will be necessary for the University to attract a more diverse student body while garnering a larger share of the most academically capable students. Improvement of the University's present position in admissions is unlikely to come about through continuation of current practices.

The ability of the University to attract an outstanding and diverse undergraduate student body is heavily dependent upon the resources it devotes to undergraduate education and the quality of undergraduate life on campus. These require a rich array of academic programs and opportunities, as well as a strong faculty commitment to undergraduate education and the enhancement of undergraduate life experiences.

The challenge is compounded by current demographic trends in the United States. An increasing proportion of high school aged students are from socioeconomically disadvantaged groups. Moreover, many in these groups have been poorly prepared to do college work.

It is necessary to address problems that exist on campus and to establish innovative new programs in which faculty will need to play a central role. Penn is a major research university with many varied demands on a largely overcommitted faculty. It will be necessary to restructure some priorities and incentives in order to encourage and enable the faculty to play a more fundamental role in the undergraduate educational and life experience on campus.

The following sections address what the subcommittee considers to be key issues surrounding the question of admissions. These issues will be further delineated during the spring semester, and a final report will discuss substantive recommendations.

Student Composition

Current college admissions strategies are posing a growing challenge to the University's Admissions Office. Many high school students aspiring to enter the top academic institutions have learned how to look good to admissions officers. The result is that many applicants appear to be more qualified than they in fact are; matriculating classes are too homogeneous, and students lack sufficient intellectual diversity and curiosity. It is often the case that those who succeed in making favorable impressions lose sight of traditional educational, social, and ethical values; many applicants to selective institutions view their admission chiefly as a means to future economic security.

The aims of the admissions process are to attract academically superior students and to achieve diversity—intellectual, ethnic, and socioeconomic—while paying attention to unusual qualities of applicants. We should seek to accept and matriculate students whose qualities diverge from the standard profile, even at the risk of admitting some who do not meet all current admission standards. The McGill Report, written in 1967 and still today the blueprint for much of the policy and practice on University admissions, calls for reserving some percentage of space in the matriculating class for this type of student.

The Admissions Office has done an excellent job of strengthening racial and ethnic diversity on campus in recent years. Greater resources and effort are needed, however, for recruitment of minorities and for their advising and tutoring on the campus. Penn should focus especially on attracting more minorities from the Philadelphia area and from Pennsylvania. Expansion of pre-college programs, such as LEAD, would be helpful. In addition, more resources need to be committed to work for the retention of minority students.

A complete assessment of admissions requires discussion of the issue of class size. Beyond a certain point, the size of the undergraduate student body is inversely proportional to the quality of both undergraduate instruction and of undergraduate campus life. Table 1 (see Appendix, page XVI) shows application and matriculation figures for the period 1956-88. During the past decade undergraduate enrollment has risen from about 8,750 to 9,700, and the size of the standing faculty in the undergraduate colleges from about 740 to 800. The enrollment numbers are noteworthy. While financial considerations must play a role here, steady inflation is bound to erode the quality of education and life on campus and harm the perception of the University. It is desirable to weaken the present link between class size and the budget process. Long-range planning of class size is needed, as opposed to the apparent current practice of meeting financial needs from year to year.

Recruiting

The goals of the admissions process are to attract academically superior students and to achieve a student body that is diverse and sensitive to educational and ethical values. While these aims are easy to articulate, how do we achieve them?

The McGill Report outlines a procedure for assigning a predictive index (PI) to each applicant, based upon SAT scores, Achievement scores, and class rank. Applicants are divided into nine academic groups defined by PI values; the numerical value assigned by the PI is intended to estimate the freshman year grade point average. The PI is used as one item of evidence by the Admissions Office in deciding whether to accept or reject an applicant. Presently a few applicants in academic group 9, the top group, and about 5 percent of those in academic group 8 are being rejected. Given the current need to attract more intellectually inclined students, the present practice of rejecting some academic 8 and 9 applicants should be re-evaluated. One possibility is to assign a faculty committee to screen all such rejections before they become final.

In addition, efforts should be made every few years to revise the PI parameters to account for fluctuations in overall campus grades and trends in standardized test scores. Further, the McGill Report calls for extensive follow-up studies to monitor the results of the admissions process. In past years such studies have been undertaken only sporadically on a limited scale, and without a significant level of administrative commitment. In view of the need to matriculate an outstanding and diverse undergraduate class each year, such studies are essential.

Greater faculty participation in the admissions process is needed. Faculty can take part in two ways: by being active in the process of setting admissions plans, goals, and priorities, and by contacting those candidates who express interest in specific disciplines and meeting individually with candidates who visit the campus. In the last few years, faculty members have played virtually no role in admissions policy and review, and at the same time there have been significant shifts in admissions policy. Examples of recent significant shifts include the effort to achieve greater geographical diversity and the upward movement in matriculation numbers.

Currently, some academic departments contact candidates who express an interest in their academic discipline. This practice should be more organized and widespread. Approximately 75 percent of the

students who enroll visit the University before they matriculate, which suggests that there are many opportunities to make contacts between faculty members and candidates. Because the present admissions practice does not include a one-on-one interview with an officer, such a procedure may lead to somewhat better identification of exceptional students.

The Undergraduate Environment

To achieve its admissions goals Penn should seek to foster an intellectual and cultural atmosphere and spirit that will attract truly talented and distinctive individuals and a diverse student body. Fundamentally new programs, greater direction and attention at the undergraduate level, and new facilities will be needed to accomplish the goals. In recent years Penn has taken numerous steps to improve undergraduate education. These include the institution of new general education requirements, expansion of dual degree programs, introduction of enhanced writing programs, new advising programs in the undergraduate schools, increased participation of senior faculty in freshman seminars, and participation of students in faculty research in Engineering and Nursing. The presence of honors programs and special academic programs has been a valuable asset in the recruiting process. Examples of the latter are the Biological Basis of Behavior major in the College, and the Management and Technology (Engineering and Wharton) and Cognitive Science (the College and Engineering) dual degree programs. These are important improvements, but they do not go far enough and fail to adequately address a basic underlying problem: There is too little contact between faculty and undergraduate students. Increased faculty involvement is essential if we are to attract more intellectually gifted students and achieve a healthier undergraduate environment on campus.

Significant steps must be taken to strengthen the campus climate for undergraduate instruction and undergraduate life. In the long run, the installation of new programs and, if appropriate, new campus facilities may prove the most effective admissions tool the University can employ. Faculty members can and should play a greater role in undergraduate campus life outside of the formal classroom. Faculty housing on and adjacent to campus, instruction within the residence units, and increased faculty attendance at extracurricular events would add considerably to the intellectual life on campus. Another critical step for improving the undergraduate environment is to establish an advising system that can be used and respected by students and faculty alike. Alternative methods of assigning advising responsibilities to faculty members should be explored. Collectively, these represent a set of first steps toward enriching the admissions process and the quality of the undergraduate experience at Penn.

> Paul Shaman, Wharton, *Chair*
> Howard Brody, Arts and Sciences
> Laura Hayman, Nursing
> John Keenan, Engineering
> Jonathan Levine, Engineering '89
> John McCoubrey, Arts and Sciences
> Alan Myers, Engineering
> Marion Oliver, Wharton, *ex officio*
> Sam Preston, Arts and Sciences
> Lee Stetson, Admissions, *ex officio*

Subcommittee on Financial Aid

This report summarizes the current status of undergraduate financial aid at Penn, based on discussions held by the Provost Planning Subcommittee on Financial Aid. The report describes the philosophy that currently informs the granting of aid at Penn, the process of determining financial aid awards, basic historical trends of funding aid, and current issues identified by the subcommittee.

Philosophy of Financial Aid

Penn is committed to funding the documented need of all students accepted for undergraduate study; an applicant's financial situation should have no bearing on admissibility to Penn. The philosophies of fully-funded need and need-blind admissions have guided undergraduate admissions and financial aid decisions at Penn.

Penn seeks an academically talented and diverse student body. Financial aid policy furthers this goal through the use of grants, work opportunities, differential aid packaging, and various loan programs. In addition to these traditional types of student aid, The Penn Plan offers a comprehensive program of financing options for all families —aided and non-aided—who seek relief from the cash flow burden of paying for college.

Penn is a signatory of the Ivy Group Agreement. This agreement stipulates, among other things, that aid will be granted only for documented need. Moreover, all members of the Ivy Group share financial aid information concerning admitted students to ensure that financial awards are reasonably comparable for students admitted to more than one of these schools.

Financial Aid Process

The financial aid process consists of developing policy for aid packages, performing a need assessment for aid applicants, and allocating financial resources on the basis of this documented need and relevant policies. Need is calculated by subtracting the expected parent and student contributions from the cost of attendance (tuition, room and board, and miscellaneous). The parents' contribution is determined by a methodology that considers the parents' income and assets. The Penn Plan provides a financing plan that enables parents of aided students to finance their contribution over a twelve-year period. This plan is available to all credit-worthy families receiving need-based aid. The students' contribution is based on the students' savings and anticipated summer earnings.

Funds available to meet need include: external grants, self-help, and institutional grants. External grants include private sponsors, Pell grants for very needy students, and state grants such as those from the Pennsylvania Higher Education Assistance Agency. If a student qualifies for a private external grant (e.g., National Merit Scholarships, Kiwanis Club grants, private corporation grants, etc.), the self-help component of the aid package will be partially reduced so that the student receives some benefit from the grant. It is particularly important for the Admissions Office to take advantage of the availability of such funds when developing recruitment strategies. Self-help consists of College Work Study and loans, such as the Guaranteed Student Loan and the Perkins loan programs. There are three sources of funding for institutional grants: Supplemental Education Opportunity Grant allocations, restricted (i.e., endowment- based) grants, and unrestricted (i.e., operating budget based) grants.

The amount of need funded through the self-help component is determined by the type of package a student is awarded. Penn currently has four aid packages, with the self-help component for freshmen in the Class of '92 ranging from a low of $3,700 to a high of $6,150. In consultation with the Admissions Office, the Office of Financial Aid develops various scenarios of self-help levels, as well as objective criteria that define package eligibility as part of the annual budget process. These scenarios are presented to the Provost, who, in consultation with other senior officers of the University, decides which scenario to implement.

The balance of need not met by the combination of external grants and self-help is funded by institutional grants.

Historical Trends

Financial aid represents a major expense for the University, 5.3 percent of the unrestricted budget in FY87.

From the period FY81 through FY87, unrestricted aid grants increased from $10,324,000 (56 percent of total grant aid) to $20,906,438 (69 percent of total grant aid). Penn currently has the highest percentage of institutional grants funded from unrestricted sources of all the Ivy League, and nearly the highest of the universities in the Consortium on Financing Higher Education.

Federal and state support for aid has fallen nearly 20 percent in the period from 1979-80 through 1986-87. The University has made up approximately three-quarters of this cut, with parents and students making up the balance. The subcommittee is concerned with the realities of decreased federal funding and the relatively high level of unrestricted institutional resources going to undergraduate aid.

Current Assessment

Available data indicate that Penn does not lose admitted students to either less expensive institutions or to institutions with different aid policies. The subcommittee supports the current method of determining need in that it is equitable and makes Penn comparable to peer institutions. The group supports the principle of fully-funded need in conjunction with need-blind admissions. It does not wish to abandon that position as have some institutions.

The subcommittee has identified several issues that need to be addressed in order to continue to meet our objectives and improve our student body. This interim report discusses the problems in abbreviated form; elaborations and proposed solutions will follow in the subcommittee's final report.

One major issue is that the amount of Penn financial aid awards funded from the unrestricted operating budget is disproportionately large compared with that of our peer institutions. This appropriation makes the aid budget vulnerable to the vicissitudes of the annual budgetary process and creates a large demand for unrestricted funds. Currently, the financial aid budget is equal to approximately 25 percent of gross undergraduate tuition revenues. A way to rectify this problem is to increase endowment funding for the aid budget. Work must be done with the capital campaign to devise innovative ways of raising financial aid money and marshalling the University's resources toward achieving that end.

Another issue is how to provide parents with additional innovative ways of meeting the parental contribution. The subcommittee will search for ways of financing an education at Penn that are appropriate for the families in our aid pool and that might improve Penn's accessibility to students from low-income families.

A third issue involves developing more and higher-paying summer jobs for aided students. The subcommittee will investigate the possibility of developing such employment opportunities.

The subcommittee also discussed the role financial aid plays and should play in promoting diversity on campus. The entire group supports fully funding documented need and making aid packages as attractive as possible. However, financial aid is only one of several factors that can influence recruitment and retention. The various relationships among these areas are being explored by several subcommittees as the planning process proceeds.

Richard Clelland, Deputy Provost, *Co-chair*
Marna Whittington, Vice President for Finance, *Co-chair*
Frank Claus, Associate Vice President for Finance
Janice Curington, College Advising Office
James Emery, Wharton
Stephen Gale, Arts and Sciences
Duchess Harris, College '91
Kim Morrisson, University Life
William Schilling, Student Financial Aid
Paul Taubman, Arts and Sciences
Robert Zemsky, Education

Subcommittee on Advising and Retention

In academic year 1987-88, the Council of Undergraduate Deans focused much of its attention on measures of academic success—including choice of major, cumulative grade point averages, and four-year and five-year graduation rates—and on those institutional factors, in particular the academic and social environment, that may contribute to a student's success at Penn.

The Council's work made it clear that investments in academic support programs generally, and advising in particular, are important for increasing the academic success rate of Penn students. It also made clear our need to know much more about those factors that affect the success of minority students.

Accordingly, in October of the 1988-89 academic year, the Provost established a Subcommittee on Advising and Retention to identify undergraduate advising and retention issues and to develop recommendations for improving students' academic success. In particular, the Subcommittee was to identify which academic, social, and environmental factors constitute obstacles to the full development of students' academic potential. The Provost hoped that the Subcommittee would establish mechanisms to identify what kinds of programs, in concert with enhanced environmental quality, work best in the context of Penn's traditions and opportunities.

As part of the process of building a University-wide consensus on the goals and priorities for Penn's academic support function, the Subcommittee on Advising and Retention will address the following:

1. What institutional factors best promote academic excellence? What factors discourage such success?

2. Which academic support services should the University provide to all undergraduates in general, and to minority students in particular? What can be gained from a careful examination of the academic support services Penn currently provides? Are there important lessons to be learned from other colleges and universities?

3. Are there specific initiatives that the University should mount immediately? In particular, is there a combination of enhanced current programs and new initiatives that might substantially increase the five-year graduation rate of undergraduates?

The Subcommittee on Advising and Retention began its work in November 1988. Given its late start, the Subcommittee can only report the issues identified as important and the methods established for addressing them. At the first meeting on November 8, Provost Aiken asked the Subcommittee to begin by focusing on the problems of retaining minority students and to develop recommendations for a comprehensive plan that would increase minority retention rates to levels comparable with majority retention rates. He then asked the Subcommittee to take up the question of advising.

Thus far, deliberations of the Subcommittee have determined that factors influencing retention rates fall within the domains of student attributes, the academic environment, and the support environment. In order to develop strategies for gathering data expeditiously for Subcommittee analysis, working groups were established within the Subcommittee in December. Each working group is responsible for one of the previously referenced domains, and they are meeting, independent of the Subcommittee, through March 14. The charge of each working group is to develop a set of key questions that need to be answered in each area, as well as recommended strategies for answering these questions.

Subcommittee members are now in the process of identifying sources of information bearing on the three domains. They are working with statistical data generated by the University Planning Office, examining data from other universities, and interviewing current students, faculty, administrators, and alumni.

To date, a questionnaire devised by Subcommittee members has been sent to all black and Hispanic Penn undergraduate alumni. The Subcommittee is hopeful that the responses to this survey, combined with data from presently-enrolled undergraduates and University faculty and staff members, will help identify the factors (including, but not

limited to, academic, social, support and extra-curricular activities) that assist or hinder minority students in their quest for academic success.

Subcommittee recommendations for enhancing and strengthening the current advising/support systems will be developed during the spring semester, and strategies for implementation will be fully delineated in the Subcommittee's final report.

> Peter Kuriloff, Education, *Chair*
> Elijah Anderson, Arts and Sciences
> Michael Austin, Social Work
> Houston Baker, Arts and Sciences
> Gail Daumit, Wharton '91
> Diane Frey, College Advising Office
> Allen Green, Housemaster, Dubois
> Harold Haskins, Tutoring Center
> James Laing, Wharton
> Traci Miller, College '89
> Melissa Moody, College '89
> Jorge Santiago-Aviles, Engineering

Ph.D. Education

Overview of the Committee's Activities

In September 1988, the Committee on Ph.D. Education was appointed by Provost Aiken and asked to review the current state of Ph.D. education in the University, articulate a vision for the future of Ph.D. education, and recommend specific actions the University community might take to move toward that vision. This interim report describes the committee's activities over the past four months and summarizes its preliminary conclusions and recommendations.

The committee met almost every week during the fall semester. We began by considering our collective vision for the future of Ph.D. education at Penn and deciding that our goal would be to develop general guidelines for the operation of Ph.D. programs, which would help to develop and maintain excellence in all.

The committee then moved to assess the current state of the University's Ph.D. programs. Since responsibility for Ph.D. education is so widely dispersed among the schools and graduate groups, it was essential for the committee members to become generally familiar with the variety of existing Ph.D. programs, their various modes of operation, and the particular challenges they face. It would have been impossible in the time available to review each graduate group individually. Instead, the committee asked representatives from each of the schools to appear before it and discuss the state of Ph.D. education within their school. The school representatives were either associate Deans responsible for doctoral education or other faculty members chosen by the Deans. They included Donald Fitts (SAS), Wayne Worrell (SEAS), Paul Kleindorfer (Wh), Florence Downs (Nursing), Seymour Mandelbaum (GFA), Larry Gross (ASC), and Michael Tierney (GSE). Saul Winegrad (BGS) and Michael Austin (SW) will be interviewed early in the second semester.

To focus the discussion, the committee developed a list of questions for each school representative to consider and address. A condensed version appears below.

Overview:

What priority does the School give to Ph.D. education?
What evidence is there of this priority—how is it demonstrated to faculty, the University community, and prospective students?
Are there any disincentives for faculty to be actively involved in Ph.D. education?
How are graduate groups initiated in the School?
How is their quality monitored once they are in operation?
In what ways are the Ph.D. programs successful?
How is success measured? What aspects could be improved?

Statistics:

How many Ph.D. programs exist in the school?
What are their sizes?
Are there graduate programs that are principally focused on awarding masters' degrees as opposed to the Ph.D.?
How long does it generally take students to complete the Ph.D. degree in each group?
What is the distribution of students as a function of years in active pursuit of the Ph.D.?

Student Population—Input:

What preparation is required for admission to the Ph.D. program(s)?
Where do the Ph.D. students come from—universities and nationalities?
Do data exist on how many students apply to each graduate group, how many are accepted, how many matriculate, and how many graduate?
Do the departments in your school monitor where students who are accepted but do not enroll actually go?
Describe the quality range of the Ph.D. applicants and matriculants.
Are statistics available as to the numbers of minority students and women enrolled in the Ph.D. programs in the school?
How are Ph.D. students recruited?

Student Population—While at Penn:

How do Ph.D. students in the School generally finance their education?
What fraction win individual fellowships, research assistantships, or teaching assistantships?
If a student has a teaching assistantship, what duties is he or she expected to perform?
When do students choose an advisor?
Do the graduate groups deliberately teach skills in writing, speaking, and teaching?
Do the graduate groups in the school have a mechanism for doctoral student review of the strengths and weaknesses of the education offered by each group?
What assistance do the school or graduate groups offer for job placement?

Student Population—Output:

What fraction of students drop out—when and why?
What positions do students take after graduation?
What fractions go to academic, private, and governmental employment?
Is the job market generally good, or are some students unable to obtain appropriate positions?
Does the school have up-to-date alumni records for Ph.D. graduates?

The committee's discussions with the various school representatives led to the following conclusions and recommendations:

The Role of Ph.D. Education in the University

Doctoral studies are central to the mission of the University as both a creator and disseminator of new knowledge. The Ph.D. degree is the highest degree in scholarship and research awarded by the University. Doctoral students and faculty are essential to research and scholarship at Penn. In addition, both play major roles in undergraduate education. Thus, Penn's reputation as a major institution of higher education and research rests in large measure on its ability to attract, matriculate, and graduate outstanding doctoral students.

The Current State of Ph.D. Education at Penn

While the overall intellectual quality of Ph.D. education at Penn is very high, in keeping with Penn's role as a leading research university, the operation of the Ph.D. programs is uneven. Specifically,

1. Many existing Ph.D. programs are excellent; others are not, but are working hard to improve; still others are neither organized nor operating in such a fashion that they are likely to improve significantly without substantial changes.

2. The quality of Ph.D. education within a school is strongly influenced by the priority given it by the Dean and its importance to the financial health of the school. Some schools in which the Deans are actively involved with achieving excellence in doctoral education have outstanding examples of well-organized and effective graduate groups. The opposite also exists—schools in which graduate groups are poorly

organized and Ph.D. education is neglected by the Dean. In Schools in which tuition revenues from Ph.D. students are critical, there is clearly a risk that admissions standards may be compromised in the interest of admitting enough students to balance the budget. While this is not surprising, it certainly is not desirable.

3. Policies regarding the levels and distribution of graduate stipends and tuition payments are uneven across the University. While this may be unavoidable in some cases, it is nevertheless corrosive to doctoral student morale and worthy of careful review.

4. Penn's Ph.D. programs suffer from a serious lack of visibility both within and outside the University. Within Penn, Ph.D. programs suffer from fragmentation and a lack of organized influence on choices made in the allocation of funds and resources. Externally, the University is not as well known for Ph.D. education as it should be. Both situations can be remedied, but it will take an organized, committed, and persistent effort over five to ten years.

5. The recruiting of doctoral students is, in general, not well organized. The recruiting of qualified minority students deserves more attention at the graduate group level.

A Vision of Ph.D. Education at Penn

Doctoral programs are essential to the health of advanced research and scholarship in the University and to the excellence of undergraduate education. Excellent research and fine doctoral students attract outstanding faculty, who, in turn, carry out excellent research and scholarship, attract the most creative students, and strengthen both the reputation and the calibre of instruction at the University.

For Penn to sustain and build upon its stature in American education, it must both have and be known as having truly outstanding Ph.D. programs. These programs should attract and matriculate excellent Ph.D. candidates, students who are not only distinguished intellectually and but also possess those qualities of maturity, judgment, commitment, and tolerance that transform ability into leadership. Graduate groups should also work to attract promising applicants from non-traditional backgrounds, so that the University's programs hasten the time when there truly will be equal opportunity for all in American education.

Doctoral study is education at its most personal. It is the process by which the values and techniques of scholarship are passed from generation to generation—through the close interaction between a doctoral student and one or two mentors. Outstanding Ph.D. programs begin with excellent faculty who are committed to them. They also require good library, computational, and research facilities as well as considerable financial support for student stipends and tuition costs. All of these factors are critical in wooing the very best students to a particular graduate group. But surely the most important is faculty commitment. The faculty in Penn's graduate groups must be actively involved in recruiting Ph.D. students, in providing outstanding educational opportunities for students enrolled in their programs, and in assisting students to win distinguished appointments upon graduation.

Ph.D. education will not be outstanding without organizational commitment and support. Deans must lead their faculty in maintaining and improving the quality of the graduate groups reporting to them. Deans must hold graduate group chairs responsible for the quality of their programs. The Provost must work with the schools to ensure that Ph.D. education has the priority and financial support it deserves, and he or she must hold Deans accountable for the quality of graduate education in their Schools.

Conclusions and Recommendations

1. *The Role of the Ph.D. Degree.* The committee reaffirms the conclusions of the 1981 Report on Graduate Education, specifically that the Ph.D. is a degree in research and scholarship and is the flagship scholarly degree awarded by the University. Pennsylvania Ph.D. graduates should possess research abilities and communications skills of the highest quality. They should ask and attempt to answer significant questions of importance to scholarship and the quality of human existence. They should also be conversant with major disciplinary and cross-disciplinary intellectual trends outside their specific field of in-depth study, and function as role models by exhibiting high levels of ethical behavior.

2. *The Graduate Group Structure.* The committee endorses the graduate group structure. Organizing doctoral education around graduate groups has many advantages. It reflects the intimacy of doctoral education and the dependence of quality doctoral instruction on the research interests of small groups of faculty rather than on schools and departments. It also is a system that is considerably more flexible and open to change than programs constrained by departmental boundaries.

Nevertheless, the graduate group structure has certain disadvantages. Its organizational flexibility risks blurred lines of accountability. It is essential that graduate groups do not become lost in the system and effectively held accountable to no one. Problems of potential disorganization and fragmentation can be addressed by articulating clear standards for the organization, evaluation, and function of graduate groups. The committee will undertake this task in its final report.

3. *Quality of Doctoral Programs.* To ensure that graduate groups are of the highest quality, the committee recommends that each graduate group review all aspects of its program during the 1989-90 academic year. The review should involve two separate committees—one comprised of faculty from within the group and Ph.D. alumni, the other of Ph.D. students currently in the program. The two groups should produce a single report on the health of the program and a five-year plan for addressing problems and deficiencies that have been identified. The report should be addressed to the Dean of the School responsible for the graduate group.

In addition, the Ph.D. program in each graduate group should be reviewed at least once every five to seven years by a committee consisting of scholars from outside the program and, if possible, some scholars from outside the school. The results of the review should be presented as an oral and written report to the Dean of the School responsible for the program, who then will present them for comment to the faculty in the graduate group.

The Deans and the Provost should ensure that these reviews are completed by each graduate group.

4. *Attracting and Matriculating Outstanding Students.* The active recruitment of Ph.D. candidates is a necessary function of each graduate group. Each School should ensure that recruitment efforts are organized and coordinated within its graduate groups. The school should maintain accurate records of the applicants to each graduate group, indices of their quality, minority status, and ultimate school of matriculation. Similarly, each graduate group should, by some appropriate means, poll each student admitted with regard to why he or she did or did not ultimately enroll in Penn's program. Each school should also develop and maintain accurate alumni records for Ph.D. graduates and work to continue their association with the University after graduation.

Fellowship support is a major issue in recruiting outstanding doctoral students. The committee recommends that the schools and University work to establish endowed funds to provide for doctoral student fellowships. Prestigious, named fellowships would greatly enhance the visibility and attractiveness of Penn as an institution for doctoral study.

The Provost should organize an annual all-University workshop for those faculty responsible for doctoral student recruiting in each graduate group. The workshop should be held once a year and address issues of Ph.D. student recruitment—what works, what doesn't—and how the University as a whole can become more effective in this activity.

Designated funds for doctoral student recruiting should be made available to each graduate group by their Dean.

5. *Minority Recruitment.* Efforts currently underway to recruit minority students into Ph.D. programs should be strengthened. The five-year plan of each graduate group should include an explicit plan for recruiting minority students and women so that Penn might become a leader among American universities in efforts of this sort. Each plan should identify principal sources of minority students and propose specific efforts to acquaint them with and attract them to Penn's programs.

Committee's Plans for the Spring Semester

During the spring semester the committee will consider these and other issues relating to doctoral education. It plans to meet with representatives of the doctoral student body in the University to learn

their opinions about Penn's strengths and weaknesses in doctoral education. In particular, the committee will elaborate standards for the operation and functioning of graduate groups and Schools in each of the areas outlined above. The committee will also examine the issue of minority recruiting and attempt to identify those aspects of Penn's doctoral programs that encourage or discourage qualified minority and women applicants. Finally, the committee will discuss the organization and influence of doctoral education at the level of the central administration, including issues of equity in the support the University offers to doctoral students regardless of the school with which they are affiliated.

Gregory Farrington, Engineering, *Chair*
Beth Allen, Arts and Sciences
Richard Clelland, Deputy Provost
Florence Downs, Nursing
Donald Fitts, Arts and Sciences
Oscar Gandy, AnnenbergWayne Glasker, Grad, Arts and Sciences
Howard Goldfine, Medicine
Chris Johnson, Grad, Arts and Sciences
Paul Kleindorfer, Wharton
Joseph Rykwert, Fine Arts
Saul Winegrad, Medicine
Wayne Worrell, Engineering

Professional Education

Mission

The Provost's charge to the Planning Committee on Professional Education essentially comprised four questions:

1. Are there—or should there be—common aspirations that link Penn's programs of graduate professional education?
2. What current programs link Penn's professional schools?
3. Are there administrative issues that should be approached in a consistent manner among all professional schools?
4. What ideal mix of faculty best fits the teaching, research, and service needs of the professional schools?

Committee Process

The Planning Committee on Professional Education represents the entire set of professional schools at Penn. A logical initial question was, what constitutes a professional school? We agreed that the major criterion was whether a practitioner-oriented degree was awarded. This definition had the effect of including all schools except Arts & Sciences, Annenberg, and Engineering, although the professional interests of Engineering are represented on the Committee.

The Committee has worked vigorously to respond to the Provost's questions. Our deliberations have focused on potential linkages among the professional schools and with Penn as a whole, as well as on whether the fostering of certain linkages could be mutually beneficial.

The Committee addressed the first two of the Provost's questions in the fall semester. Although the thinking of the Committee is not yet definitive, a number of preliminary conclusions can be drawn. These are outlined below as the "common aspirations" of the professional schools and the "current linkages." We have also added a section suggesting possible "impediments" to increasing the interconnectedness of Penn's professional school community.

Common Aspirations

Penn's professional schools represent a major strength of the University and comprise an important part of Penn's portfolio and its world-wide reputation for excellence. Penn's professional schools are unusual in their strong ties to the University, as well as in their coexistence on a single campus.

Linkages are desirable among the professional schools and with other schools at Penn. These linkages enrich all the University's schools through the sharing of ideas, concepts, and methods to the mutual benefit of the schools involved.

The objective at the University level should be to create an environment that fosters and encourages linkages among the professional schools. This environment should remain compatible with the decentralized approach.

In addition, there seem to be methods, concepts, and issues that may be common across professional schools: for example, multivariate methods, behavioral and social science theories, and issues such as ethics. Yet each profession is bound by a particular *context*; it is valuable to pursue research and teaching appropriate to that context.

Although there are impediments to increasing linkages, the University may be able to reduce some of them and to provide actual incentives that would promote greater interaction across the professional schools. The Committee will consider this question in greater depth in the spring semester.

Current Linkages

A great variety of formal interdisciplinary linkages exist among Penn's professional schools. These formal linkages are pervasive, although not necessarily deep; that is, these connections involve only small percentages of faculty effort. Despite the extent of horizontal *linkage*, there is only minimal horizontal *integration*, in the sense of combining school resources and sharing outcomes. These linkages, nevertheless, seem to produce strong interdisciplinary effects, especially because faculty who span reference groups of different professional cadres act as interdisciplinary agents of change.

Formal linkages fall into several categories: academic structures, teaching and degree programs, and research. Some examples of each category are as follows:

—Among graduate groups, almost 60 percent (44 out of 74) involve faculty from more than one school.

—Although the data are uneven, secondary appointments in other schools appear to be held by about 2 percent (40 out of 1802) of the University's standing faculty. However, informal activities that cross school boundaries appear to be much more common.

—All of the professional schools participate in the education offered to University undergraduates. Three professional schools offer their own undergraduate degree programs and require students to take courses in other undergraduate programs. Double majors are not uncommon.

—Dual degree programs at the post-baccalaureate level are numerous in the professional schools, and the Committee is in the process of documenting their extent.

—Among research centers and institutes, almost one-third formally involve faculty from more than one school.

—Of externally funded research projects since 1984, over 13 percent (34 out of 255) have been identified with prime accounts in one school and sub-accounts in another school.

It is important to emphasize that formal linkages seem to represent only a small percentage of the "connections" that actually occur across professional schools. University governance, committee structure, and informal research bring faculty from multiple professional schools together regularly.

Impediments

One impediment to taking advantage of linkages is simply the difficulty of documenting linkages that actually exist in a complex and decentralized university. Centralized inter-school data are not readily available, and different data sources provide somewhat different information. In fact, the costs of maintaining definitive centralized data on professional school linkages may be greater than the benefits to be derived. Nevertheless, the effect is to understate the interdisciplinary linkages that exist. This is especially true in the research domain and in continuing education.

Other impediments to linkages that the Committee wishes to note:

—Joint degree programs are perceived to be hampered by administrative obstacles and inadequate coordination on issues such as ad-

missions' criteria and procedures, class scheduling, and advising.

—Responsibility-center accounting creates disincentives to link-ages. Schools may not encourage their students to take courses elsewhere because of loss of tuition revenue. They may prefer to keep research grants alone rather than sharing revenues.

—Differentiated faculty structures may be appropriate for individual schools responsive to professional needs in teaching, research, and practice. These differences may limit the extent of feasible linkages.

The Committee will provide greater depth in response to the three topics broached in this report and will also address the remaining questions suggested by the Provost in the spring semester. Comments and suggestions from the University community would be most welcome.

Thomas S. Robertson, Wharton, *Chair*
Howard Arnold, Social Work
Dorothy Brooten, Nursing
Lee Copeland, Fine Arts
Robert Davies, Veterinary Medicine
Kenneth Fegley, Engineering
Robert Gorman, Law
Malcolm Lynch, Dental Medicine
Kathy Mockler, Grad, Veterinary Medicine
Gail Morrison, Medicine
Elias Schwartz, Pediatrics
Anita Summers, Wharton
Michael Tierney, Education

Faculty Development

The Committee on Faculty Development has held extensive discussions to consider Penn's objectives with regard to faculty development. We have considerable agreement on the concept of "faculty development," and even on our targets. The second question posed to us—"How well is Penn currently supporting its faculty?"—represents a research effort that is underway. This semester we also hope to review policy alternatives: setting priorities and making specific recommendations. This is a step that calls for widespread participation by the faculty.

Since the issue is University-wide, it is clear that overall policies must have the support and commitment of the central administration. Specific needs and policy implementation might well vary from School to School, and department to department, and will therefore require the support and commitment of the appropriate administrative officers of these units. Clearly, too, a major factor in attracting excellent scholars and teachers and in maintaining a productive faculty is the quality and collegiality of the academic community at large, so the policy commitment to others reaches to the individual level.

The Meaning and Importance of Faculty Development

The objective of "building" the faculty has external and internal dimensions. In the coming decade many of our older faculty will be retiring. At the same time, the University will be competing in a smaller pool of young graduates. This makes it especially important to attract faculty from "outside," offering a satisfying faculty career at Penn with appropriate monetary and non-monetary rewards and fair standards and procedures for promotion to tenure.

The internal dimensions of faculty building are perhaps even more vital. Our faculty are our most important asset. Most stay at Penn for many years, some an entire career. Internally, faculty development means creating a stimulating, caring, interactive atmosphere that is conducive to quality research *and* teaching. It also means granting opportunities for continued education and career development, providing resources for research and academic interchange, and offering fair rewards to insiders as well as to outsiders.

The Stages of Faculty Development

Faculty development occurs throughout an academic career. We are concerned about guiding young people into the most productive use of their academic skills, creating a campus environment with appropriate incentives and with opportunities for academic "refreshment" to more mature scholars; and making possible a smooth transition to productive retirement at the other end of the faculty career cycle. These are complex tasks. Although Penn is primarily a research university, our faculty perform their teaching responsibilities with commitment and enthusiasm. Penn also calls on its faculty to participate in numerous service and governance activities.

Faculty development cuts across a wide range of issues at every stage of the academic career:

Early Stage:

—Mentoring and guidance of academic careers.
—Training to improve teaching and/or research skills.

Tenured Stage::

—Opportunities for continuing education in the discipline.
—Opportunities for redirecting careers.

Retirement Stage:

—Retirement options—all the more important now that retirement has been uncapped.
—Opportunities for continued professional activity after retirement.

All Stages:

—Research funding—providing appropriate seed-funding and facilitating the search for outside research support.
—Awards for quality teaching and interaction with students.
—Salaries and benefits—reconciling the need to meet market offers with fairness and encouragement for all faculty.
—Computing—providing micro- and mainframe computation and appropriate communications.
—Professional expenses—providing appropriate financing, possibly by individual accounts.
—Teaching loads—providing equitable arrangements, release time, and rewards for service activities.
—Working environment—providing offices and secretarial assistance.
—Quality of life—building the University community: housing, schooling, child care, parking, cultural activities.

Who Administers Faculty Development?

One difficulty is that these issues are handled in very different ways by different SSchools and even by departments within a school. Priorities clearly differ among faculty in different disciplines and at different ranks, and probably among individuals. Our desire to advance and fully integrate minorities and women may also call for special faculty development concerns.

Some of our schools and departments handle faculty development with "bumbling haphazardness," to use the words of one faculty member. They prefer to focus simply on attracting a top-notch faculty, using market conditions and outside offers as the primary forces influencing faculty rewards and on individual initiatives to effect faculty development. Still others, fortunately, see the development of the faculty as a central priority calling for the explicit attention of every department chairperson.

This raises a question: From what level of administration should faculty development be directed? In accord with the traditions of the University of Pennsylvania for decentralized decision making at the school level, faculty development has been primarily a school matter. Yet, there is a central responsibility to advance faculty development in all schools and to persuade those that lag behind to participate in programs pioneered by others. Incentives can also be offered centrally, within budget constraints, but decision making and responsibility rest with schools and departments.

Goals for Faculty Development

After lengthy discussions, the Committee has reached some tentative conclusions:

There are opportunities for improving faculty development at Penn along numerous lines. Consequently, initiatives for faculty development should represent an important part of the University's planning and actions for the decade of the 1990s.

Faculty development is most immediately a matter for the individual schools and departments, but some aspects are clearly central responsibilities. For example, the central administration can and does set benefits policy; with the uncapping of retirement, it can provide for new retirement options. The primary role of the central administration with respect to faculty development is to lead and to provide incentives, particularly for those policies that will require additional resources. All schools and departments should be persuaded to develop the programs of faculty development most suited to their specific needs.

Faculty development planning must take into account the varied needs of faculty at different stages of their careers. For younger faculty, the key issue is how to nurture their full potential prior to the tenure decision. For tenured faculty, the key issue is how to guide and improve academic life to maximize their productivity and satisfaction as teachers and scholars during their working career. For older faculty nearing and beyond the age of retirement, the key issue is how to ease the transition to retirement and to offer productive activity for emeritus faculty.

Faculty development must also consider the needs of different disciplines. The humanities may call for leave time and library resources, the sciences for laboratories and research grants, engineering for improved computers, and the professional schools for increased opportunities for contact with the practicing professions, for example.

At all points we must be sensitive to, and address substantially, the special needs of women and minorities. Career development and retention of women and minorities are obviously critical. Issues and problems relating to these groups will be part of every discussion. While all aspects of faculty development apply to minorities and women, special approaches may be appropriate to integrate these groups more quickly into the faculty.

There will be difficult trade-offs: how to balance the cost of laboratories with the financing of individual research accounts, to offer one typical example. A greatly enlarged Research Foundation may be an important central pool through which to support faculty needs related to research.

However, it is important to emphasize that not all faculty development entails significant financial cost. Much can be accomplished simply by communication, by redirecting financial and non-financial incentives and, by establishing a recognition that we value our faculty and that we seek to guide them to maximum intellectual productivity.

In the course of the coming months, we anticipate gathering much additional information on practices at Penn and elsewhere with the expectation of making substantial recommendations in our final report, along with specific suggestions for their implementation. We hope to speak with many of you—administrators, Deans, department chairpersons, and individual faculty. We would appreciate hearing from all of you about your ideas and priorities.

F. Gerard Adams, Arts and Sciences, *Chair*
Howard Arnold, Social Work
Richard Beeman, Arts and Sciences
Stephen Burbank, Law
Claire Fagin, Nursing
Louis Girifalco, Engineering
Dorothea Jameson, Arts and Sciences
Phoebe Leboy, Dental Medicine
Franz Matschinsky, Medicine
Anthony Santomero, Wharton
Peter Vaughan, Social Work

Research

Introduction

Research may be broadly defined as those efforts designed to lead to the creation of new understanding, new ways of thinking, and new knowledge. In planning for research at the University of Pennsylvania, it is essential to provide for the disparate needs of widely divergent cultures, while at the same time recognizing a set of shared aspirations relating to scholarship and the creation of knowledge. Achieving the University's institutional goals in research and scholarship requires the preservation and promotion of an environment conducive to scholarship. The maintenance of modern libraries, computer facilities, and laboratories is a continuous process requiring continual investment. It is critically important that the University be structured so that the faculty are encouraged to carry out research and are afforded the time, facilities, and infrastructure necessary to allow research and scholarly activities to flourish.

The stature of the University is directly related to the quality and vitality of the research of its faculty. The higher our status, the better our ability to recruit students and faculty. In addition, the stature of the University is a critical determinant in defining our influence on national and international policies, programs, and goals. Thus, the aspirations for excellence and enhanced prestige of the University depend on our ability to create new knowledge through a broad range of research activities.

The members of the Committee believe that our institutional goal is to excel in research across the University, to give faculty as much research support as possible, and to provide focused support for selected research initiatives. The University is currently preeminent in the mid-Atlantic region, but we rank only in the mid-teens nationally on a variety of measures of research productivity, and as a university we may not be maintaining our ranking among our peers. Our peer institutions are outspending us on new buildings and often outbidding us for faculty. Nationally, resources are becoming concentrated in fewer of the research-intensive universities, and this trend is likely to accelerate. We operate in a competitive environment in which large fluctuations in support are the norm, and such fluctuations frequently occur with little advance warning. A means of providing a stable support base for the conduct of research would significantly improve the ability of our faculty to optimize their efforts. Many of the mid-level and senior faculty at the University feel that their needs are not being addressed and

Expenditures for Sponsored Research, 1984-88
Expenditures by Schools (in millions)
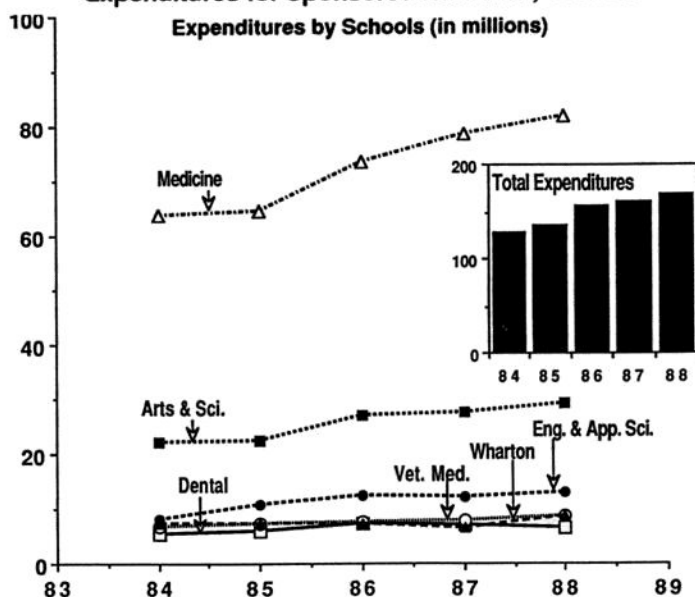
that the University has not provided programmatic leadership nor established the infrastructure needed to support research. In some cases our faculty, because of a heavy teaching load, do not have sufficient time to pursue scholarly activities at an appropriate level, while for other faculty, the available facilities are marginal or inadequate. This is particularly true in the physical and life sciences, where technological advances have increased the cost of doing research and diminished the useful life of equipment and facilities.

Restrictions on resources make it necessary for the University to invest in a limited number of specific initiatives. One of the Committee's objectives is to advise the Provost on the most appropriate initiatives, keeping in mind that the goal is the creation of knowledge. We recognize that the cost of doing modern research is such that investments generally will need to be made in areas in which we have significant existing strength and that have a high probability of being able to generate extramural support. On the other hand, not all research is likely to be eligible for substantive extramural support, and special consideration must be paid to these types of research efforts, some of which require long-term institutional support.

Current Sponsored Research Efforts

Sponsored research at Penn is a very large enterprise, amounting to approximately $170,000,000 in FY 1988. The School of Medicine brings in approximately one-half of that amount. The other programs with major extramural research funding are those in Arts and Sciences, Engineering and Applied Science, Wharton, Dental Medicine, and Veterinary Medicine. These six programs bring in over 85 percent of total research dollars at the University (see figure). The expenditures depicted in the figure are in current dollars; accounting for inflation would flatten the curve. As a university, Penn has ranked only in the mid-teens in terms of total sponsored research.

The School of Medicine currently ranks tenth nationally in terms of sponsored research, but this represents a significant slippage since it has historically ranked as high as sixth. The curve in the figure for sponsored research in the School of Medicine includes both basic and clinical research. When looked at separately, there is evidence of greater growth in clinical programs than in the basic sciences. The problems in the basic sciences in the School of Medicine are shared by other schools within the University and stem from a lack of endowment funds, an outdated physical plant that was not designed for carrying out modern, technologically-advanced research, and inadequate recruitment in recent years of promising young investigators or faculty who have already achieved renown.

Organization of Research

Universities are traditionally organized on a pedagogical basis. Many of our schools and departments exist by virtue of the need to teach a given group of students, whether their interest is in business, medicine, law, or nursing. Research is not restrained by the same boundaries; much modern research is multidisciplinary. For example, techniques of cell and molecular biology are revolutionizing research in the life and biological sciences, and the expertise of the molecular biologist is required by investigators across the entire campus. One of our goals as an institution should be to devise ways to optimize interactions and collaborations between faculty with like interests and needs who are in different schools. However, it is difficult to organize such cross-school initiatives. Two successful examples are the Laboratory for Research on the Structure of Matter (LRSM) and the Institute of Neurological Sciences; a potential third is the Institute for Advanced Science and Technology.

The University traditionally operates on a more or less *laissez-faire* basis, and the research that is carried out represents the sum total of the interests of the faculty at the University. In particular, there is a need to facilitate programs that bridge schools; such programs are often too large to be handled by individual investigators and need institutional support.

We also need to identify specific institutional initiatives. It may be appropriate to establish mechanisms within the University to identify areas in which potentially important major initiatives should be undertaken. Once identified, mechanisms need to be put into place that will foster achieving such institutional goals. For example, there has been relatively little emphasis on research on AIDS on this campus. This may be the result of institutional neglect, of there not being an adequate number of investigators having an interest in AIDS research, or of investigators' lack of adequate facilities to pursue such research.

Institutes and centers represent a way of bridging disciplines and schools as they encourage individuals with overlapping interests to interact with each other. Even comparatively modest investments directed through a center or institute can help investigators generate grants that individuals or individual departments acting alone could not secure. Such investments can lead to coordination and planning among individuals, departments, and programs. A potentially important example of this type of organization within the University is the Institute for Advanced Science and Technology (Physical Sciences and Engineering Complex). This institute bridges SAS/SEAS and includes Cognitive Science, an area of strength at Penn. The Committee is in the process of identifying a set of specific programmatic initiatives that it believes should be undertaken.

Recruitment of New Faculty

A major problem at any university is the need to continuously recruit young faculty with high potential. At the University of Pennsylvania there is an additional need for recruitment of a number of well-established, preeminent investigators. Both of these problems need to be addressed. The program of Trustee Professorships represents a significant investment that is beginning to address the latter problem and it should be encouraged and expanded. Of particular note is the fact that these professorships encourage links between schools.

Funding of Research

There is a major need for increased amounts of unrestricted funds for the support of research. In particular, the development of an endowment for the support of research is a very high priority. The Research Facilities Development Fund and the Research Foundation are innovative programs that are having a significant impact on research at the University, and they should be expanded. The former should be used to establish and sustain core facilities to support research at the technological edge of the life and physical sciences. Among the uses of the Research Foundation should be support of initiatives not yet sufficiently developed to permit application for extramural support and the funding of scholarly activities of significant merit for which extramural support is not readily available. This is especially important in the social sciences and humanities, where even small amounts of funding can significantly advance research projects. The possibility of establishing a corporation funded by venture capital and devoted to commercial exploitation of the discoveries of the faculty should also be actively explored.

Research Facilities

The research facilities available to the faculty of this University need substantial modernization. This is true both *a priori* and by comparison with the facilities available at peer institutions. Specific needs include a building to house the Institute for Advanced Science and Technology and a new building for research in biosciences to permit expansion of institutional efforts on protein chemistry and molecular biology. Both of these structures should be occupied by faculty from different schools within the University. Core support facilities should be provided in these buildings and elsewhere throughout the University.

The Committee will continue to pursue these issues through the spring and will make substantial recommendations in a final report.

Perry Molinoff, Medicine, *Chair*
John Bassani, Engineering
Joseph Bordogna, Engineering
Ralph Brinster, Veterinary Medicine
Gary Cohen, Dental Medicine
Barry Cooperman, Vice Provost for Research, *ex officio*
David De Laura, Arts and Sciences
Robin Hochstrasser, Arts and Sciences
Richard Marston, Wharton
Rosemary Stevens, Arts and Sciences

Academic Information Environment

Our goal is to establish a Bill of Rights for *timely access to quality information* for pertinent members of the University of Pennsylvania community. Among the questions we are addressing are:

1. What information do we need to have access to?
2. What is the cost of this access and who should be responsible?
3. How do we wish to organize and govern the Bill of Rights?

During the last three meetings, our working group has concentrated on fact gathering in order to answer the first and in part the third questions contained in the official charge statement. We had reports from the former Vice Provost for Computing, Dr. Stonehill, on the current status of networking at Penn, and from the Head of the Libraries, Dr. Mosher, on the current state and future vision for the Library system. In addition, all the members of the working group have addressed individually questions one and three by preparing a summary of their perceived visions and needs for their academic areas. No prioritizing of issues has been attempted at this time. An overview of this material is contained below:

1. There are three different needs to be addressed by an advanced academic information environment:

   a. *Access to information as an end in itself.* Traditionally this has been provided in hard copy format. Recently access to information has been extended by electronic means, such as access to various data bases.

   b. *Access to information for communication and instruction.* Traditionally this has been provided by mail, telephone, and oral presentations in classrooms and/or lecture halls. Now this communication is extended again by electronic mail, which allows individuals to pass not only text (similar to telephones), but also manuscripts including graphs and pictures (similar to the traditional mail service). In the teaching context, the current technology allows off-site demonstrations of various results, simulations, and storage of lecture material for later review.

   c. *Access to information processing.* Information processing includes computation, text and image processing, and symbolic manipulation. Here one is faced with different classes of problems that imply different computing requirements, starting from personal computers, through work stations, through powerful vector machines like Convex, up to supercomputers like Cray.

2. All the above needs can be satisfied by the currently implemented technology, and it has been acknowledged that the fiber optical backbone of PennNet can provide the necessary interconnectivity among sites. The major technological shortcoming of the existing configuration of PennNet is the limited bandwidth of the local switches, which precludes the transmission of video and other data requiring high-speed communications. Also, we are behind our peers in facilitating student and faculty access by not having connections to PennNet in the dormitories or all offices and labs.

3. Based on the presentation by Dr. Mosher and the discussion that followed, it has been assessed that although we must plan for the future electronic library with all the services that it will require, we must also strike a balance with the ongoing needs of the traditional library.

4. We began to collect some ideas on how to distribute the responsibilities and resources for different services between the central administration, the schools, and departments. The committee concluded that the various needs of academic computing should be recognized as central to the University's mission and should not be obscured by or subordinated to the needs of administrative computing.

5. Needs for specialized software and hardware are often shared by several departments within and among schools. The rapid breakdown of traditional disciplinary boundaries in research creates problems when the administrative units responsible for distributing resources are based on traditional disciplinary boundaries and do not match the functional working relationships.

During the spring semester, the working group on the Academic Information Environment will prioritize and delineate these issues and discuss solutions. Substantive recommendations will be made in a final report in the spring.

Ruzena Bajcsy, Engineering, *Chair*
Lawrence Bernstein, Music
Frederic Burg, Medicine
David De Long, Fine Arts
Robert Hollebeek, Arts and Sciences
Elizabeth Kelly, Law
Robert Kraft, Arts and Sciences
Janice Madden, Arts and Sciences
Paul Mosher, Vice Provost for Libraries, *ex officio*
Ronald Arenson, Acting Vice Provost for Computing, *ex officio*
Eric van Merkensteijn, Wharton

International Dimensions

Introduction

News coverage of higher education has recently focused on the need for American universities to improve the climate for international education and study abroad programs. A headline in *The Chronicle of Higher Education* for December 7, 1988, warned: "Colleges Must Improve Study-Abroad Programs or Risk Diminished American Stature, Panel Says." In a speech to the American Council of Higher Education in January 1989, Derek Bok stressed the importance of international perspectives and programs that link American universities to the international scene.

These news reports and speeches simply reflect the growing concern that American universities have a mission to prepare their students for a new international role, one that America participates in, rather than dictates the grounds of. This sea change in America's international role requires a cultural re-orientation, a profound alteration in attitudes towards other people, other cultures, other languages. One piece of information seemed to sum up for us the urgency of the problem. Amid an increased tempo of news reports on the growing impatience of the Japanese with America's inability to understand or act upon its changing status in world affairs, we discovered this stark statistic: there are 192 Japanese students at Penn this year, while only *three* Penn students are in Japan.

Clearly, our students are simply not getting the exposure, training, and experience requisite for a responsible role in a society where America's advantage, its ability to compete successfully and to exercise some form of leadership, depends upon an understanding of the international arena. Beyond the dictates of international politics and business, however, a knowledge of how other people think and live has always formed the basis—and the strength—of Western education. We need to reaffirm that foundation more than ever today.

It is natural that universities assume the lead in defining and preparing for this change. To be truly significant, as well as effective at Penn, the international perspective must be a University-wide endeavor, and not simply the province of a few isolated departments, programs, or schools. The Provost's Working Group on International Dimensions has pursued its task in the conviction that Penn has a leadership role to play in charting the course of the internationalization of higher education in the 1990s, and that all segments of the community have a contribution to make and something to gain from the effort.

Current International Activities and Resources

The committee quickly discovered that Penn has a considerable international flavor already. We are rich in international expertise and have a growing number of programs with a significant international dimension. The Office of International Programs has been compiling an

International Inventory to track all the Penn faculty and administrators with international components to their work or in their background. The inventory shows the considerable depth on which we may draw in this domain. We also noted a leadership role played by Penn alumni in multinational corporations and other global enterprises. Finally, we noted that the five-year plans of the different schools began to address the issue of internationalization.

There are currently more than 50 centers and institutes throughout the University in which some form of international activity occurs: collaborative research, organization of international conferences and seminars, hosting of foreign colleagues. The Law School, Wharton, Education, Engineering, the Medical School, and Annenberg all have active programs of one sort or another. The Leonard Davis Institute, Project LINK, the Center for the Analysis of Developing Economies (CADE), the Population Studies Center, the Cancer Center: these are but a sampling of the research groups with international implications.

Penn has four area studies centers (designated as National Resource Centers for graduate education and funded under Title VI of the Higher Education Authorization Act through the U.S. Department of Education): the South Asia Regional Studies Center, the Middle East Center, the Center for Soviet and East European Studies, and the Joseph H. Lauder Institute for Management and International Studies. Besides the federally funded centers, there are a number of program centers with significant international orientations; e.g., the Italian Studies Center, the Latin American Cultural Studies Center, the Center for West European Studies, and the Center for Cultural Studies. We teach courses in over 40 foreign languages and have played a leadership role in developing proficiency-based language instruction and testing (as well as in the training of T.A.'s in foreign language instruction).

At present, there are 16 Penn-sponsored study abroad programs (semester, academic year), and 12 summer abroad programs. Roughly 2,255 foreign students study at Penn each year (11 percent of all students), of which 40 percent come from East Asia, with Korea, Japan, China, and Taiwan being the principal feeder countries. At the same time, some 600 visiting scholars come from abroad.

The committee found ample evidence of international presence, programming, and expertise at Penn, but no focus, no sign of a coherent plan, nor even an effort to coordinate activities in this sphere at the department or School level. One sign of the lack of coordination may be seen in the imbalance between the foreign students who come to study at Penn and our students who go abroad. While foreign students perceive an advantage to studying in the United States, a significant number of Penn students have yet to see the reciprocal advantage to their studying abroad. Whereas 2,255 foreign students currently study at Penn, only 596 Penn students went abroad last year on Penn-sponsored programs.

In sum, Penn has an important involvement with international educational dimensions, but we have no coherent focus at the University level; we have not evolved a Penn culture of international education. Unlike some other universities, we have not developed a holistic approach to the issue. The Planning Committee will devote the spring semester to developing a cogent, University-wide approach to international education.

Overall Goals for a Strategy on International Education

The committee plans two thrusts to the work it will undertake this spring in addressing the need for a coherent, University-wide focus on international education. We will attempt to articulate a series of overall goals for a Penn strategy, and then suggest a series of specific topics that might help in moving towards those goals. We hope to suggest ways in which each school may implement the plans for international education they have already set forth in their five-year plans, in coordination with other schools, programs, or research groups. In short, we hope to build upon our strengths to achieve a strategic focus that will be both structural and cultural. The planning process represented by this committee is the first step in the direction of a coherent approach.

The committee's findings indicate that we must be able at Penn to achieve an approach that encourages a simultaneous intra-school and inter-school integration of policies and programs geared to international education. As a preliminary analysis, we have identified five major areas

and a number of specific topics that we would like to address in greater depth.

A. Structure for coherence: University-wide five-part structure to coordinate international efforts across schools.

1. *An Inter-School Coordinating Commission for International Education.* Given the sensitivity of the school structure at Penn, we feel that implementation of a University Inter-School Coordinating Commission is a structural desideratum for implementing a coherent strategy for internationalization.

2. *International Programs Office.* The International Programs Office already exists as a University-wide (e.g., Provostial) entity with the potential to provide the coordination and coherence requisite for the kind of effort envisaged. The office has a superlative track record of working effectively and unobtrusively with departments and schools to plan and implement exchanges and programs. A reaffirmation of the centrality of this unit and the functions it performs in relation to schools and departments would be necessary to implement University policy generated by the Planning Committees and the Inter-School Coordinating Commission for International Education. The International programs office should ideally work with the existing school facilities dealing with international matters to bring about a more satisfactory coordination of international exchanges and programs.

3. *Horizontally Integrated Area Studies Programs.* We need a means for cross-University coordination of international study efforts. There is currently no mechanism for sharing effort or information in a variety of University-wide research and pedagogical initiatives in international study. It would be helpful to provide at least minimal information on the nature of work being done at Penn in a particular language or area to all people concerned. At present such contacts are school-specific and discipline-specific. This makes it difficult to coordinate visitors and to derive maximum educational advantage from visiting scholars or exchange students.

4. *Study Abroad, Exchanges, International Research Grants.* Heretofore, ventures in the area of foreign study, faculty or student exchanges, and research efforts have been primarily department and discipline initiatives. While departments and disciplines must continue to shape the kinds of programs in which their students and faculty are engaged, it is also possible to encourage and design programs and exchanges in areas where this has not traditionally been deemed necessary. It is part of the sea change to discover how a subject is done in other university cultures.

5. *Outreach Via School Programs.* Penn has much to gain by exploring partnership projects with area industries and by serving as a focal point for community awareness of international dimensions of education. The Lauder Institute, to name but one example, has encouraged interaction with foreign executives in area industries. Other efforts of this sort could be researched and exploited in a variety of disciplines.

B. A "Language Across the University" program geared to functional rather than high cultural language learning.

1. International education, to be effective, requires at least a functional ability to communicate in a language related to the specific area of research focus. Language learning in American universities has traditionally been culture-oriented rather than discipline-oriented. We need to experiment with a University-wide language program, optional but strongly advised for certain subjects, that would be aimed at achieving proficient communication in a target language, communication linked to the discipline, or focus of research.

2. In recognition of this need, some schools (most notably Nursing and Engineering) have begun to move in the direction of such a program. It would be a real first in American higher education if Penn were able to implement a program of language across the University whereby degree programs in all schools encouraged some form of foreign language proficiency. **continued next page**

C. A Penn Language Center offering the University and community a wide variety of foreign languages.

    1. Penn should have a bimodal structure for acquiring foreign languages. We should maintain our traditionally strong foreign language departments as the intellectual focus of linguistic and cultural study.

    2. At the same time, recognizing that foreign language departments cannot offer a full complement of the languages necessary for a truly international environment, we need to implement a Foreign Language Center that would allow proficiency-based instruction in a wide variety of commonly and less commonly taught languages.

D. Study abroad for a majority of students.

    1. At present, seven percent of Penn students participate in foreign study. Most programs are purely language-based or culture-based. We need to find a mechanism for increasing student participation, particularly at the undergraduate level, to achieve a much higher percentage of involvement in study abroad.

    2. By implementing programs more closely linked to disciplines, research interests, or professional training, the percentage of participation in international programs may be increased to a level commensurate with our commitment to the educational value of such activities.

    3. The Lauder Institute in Wharton and SAS offers a model for possile adaptation to other areas of the University and, with appropriate modification, to the undergraduate environment.

E. Language Learning Research Center to link Schools in language acquisition research to make Penn a leader in "contextual," discipline-oriented language acquisition.

    1. Penn already has internationally recognized strengths in linguistics, cognitive science, and language acquisition. We need to focus these strengths in a "Manhattan Project" model that may make new progress in the theories and methods of second language acquisition.

    2. The Language Learning Research Center would act as a research interface between work being done in theoretical aspects of cognitive science and linguistics and the Penn Language Center and foreign language departments.

Specific Topics Being Addressed

The Committee has identified a number of subtopics related to the overall goals to be addressed in the spring semester. At this time we would prefer to list only the seven general rubrics selected for further study.

    A. International Educational Exchange (Institutional Linkages Abroad)
    B. Penn-Sponsored Study Abroad Programs
    C. Foreign Students and Scholars
    D. Area Studies Centers
    E. Foreign Languages
    F. Internationalizing the Curricula
    G. Administrative Structure for International Education

Stephen Nichols, Arts and Sciences, *Chair*
Edwin Andrews, Veterinary Medicine
Kenneth Cheng, Grad, Wharton
Nancy Farriss, Arts and Sciences
William Graham, Engineering
Nancy Hornberger, Education
Anne Keane, Nursing
Herbert Levine, Arts and Sciences
Robert Mundheim, Law
William Pierskalla, Wharton
Patrick Storey, Medicine
Robert Vanarsdall, Dental Medicine

Appendix I (Data discussed on page V)

Table 1: Admissions Figures, 1956-1988

Year	Applications	Admits	Rate	Matriculations	Yield
1956	3656	2375	65.0	1233	51.1
1957	3407	2443	65.8	1155	51.5
1958	4953	2389	48.2	1206	50.5
1959	5032	2360	46.9	1225	51.9
1960	6237	2799	44.9	1377	49.2
1961	5063	2821	55.7	1379	48.9
1962	4850	2975	61.3	1393	46.8
1963	4799	2877	59.9	1461	50.8
1964	6099	2906	47.6	1655	56.9
1965	7338	2899	39.5	1682	58.0
1966	7527	3116	41.4	1661	53.3
1967	7405	3127	42.2	1698	54.3
1968	8399	3285	39.1	1780	54.1
1969	7885	3329	42.2	1832	55.0
1970	8083	3439	42.5	1829	53.2
1971	7261	3735	51.4	1931	51.7
1972	7037	3851	54.7	1985	51.5
1973	7618	3745	49.2	1828	48.8
1974	7593	3903	51.4	1920	49.2
1975	9020	4235	47.0	1986	46.9
1976	8792	4390	49.9	2006	45.7
1977	8442	4489	53.1	2020	45.0
1978	7768	4349	56.0	2139	49.2
1979	9833	4225	43.0	2049	48.5
1980	11268	4591	40.7	2172	47.3
1981	11367	4478	39.4	2076	46.4
1983	10518	4548	43.2	2072	45.6
1986	13019	4842	37.2	2263	46.7

Appendix II (Chairs)

For Comment

Members of the University may send comment to chairs of working groups and subcommittees at the following addresses.

Undergraduate Education
David Brownlee, G16 Meyerson/6311
Admissions
Paul Shaman, 3019 SH-DH/6302
Financial Aid
Richard Clelland, 106 CH/6303
Marna Whittington, 731 FB/6296
Advising and Retention
Peter Kuriloff, D24 Education/6216
Ph.D. Education
Gregory Farrington, 102 LRSM/6202
Professional Education
Thomas S. Robertson, 1470 SH-DH/6371
Faculty Development
F. Gerard Adams, 333 McNeil/6297
Research
Perry Molinoff, 154 John Morgan/6284
Academic Information Environment
Ruzena Bajcsy, 560 MB/6389
International Dimensions:
Stephen Nichols, 547 Williams./6305