Planning for the
Twenty-First Century

Final Reports
of the
Ten Working Groups
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To the University Community:

Last year we began a new phase of our academic planning process: a University-wide effort to think through the University’s planning priorities for the 1990s. To begin that process we established ten working groups who spent the year examining undergraduate education, admissions, financial aid, advising and retention, graduate (Ph.D.) education, professional education, international dimensions, research, faculty development, and the academic information environment.

The initial charges to the groups were published in Almanac on November 8, 1988, and their interim reports on February 28, 1989.

Over the summer, the ten working groups completed their work. In early September, the Academic Planning and Budget Committee and the President’s Advisory Group (the academic deans in combination with the senior planning group) met in separate retreats to discuss the reports in a preliminary way, in order to develop a consensus concerning what they thought were the major themes and concerns expressed in the reports as well as a sense of those items they considered to be of high priority. Subsequent meetings of the two groups were then devoted to focused discussion of each report, with some working groups revising their documents—though not their recommendations—as a result.

Published here are the ten final reports. As you will discover, they represent a wide range of concerns and put forward an equally wide range of recommendations. During the coming weeks, the Academic Planning and Budget Committee and the President’s Advisory Group will begin the process of drawing together the key elements in these ten reports that need to be included in a coherent five-year plan for the University. We hope to have a draft of that five-year plan ready to publish For Comment by the end of the academic year.

Your reactions and comments will be helpful to the Committee as it carries out this work, and should be directed to the Provost at 102 College Hall. Thank you in advance for your careful consideration of these reports.

Sheldon Hackney
President

Michael Aiken
Provost

Contents

Undergraduate Education............................ 3
Subcommittee on Admissions............................ 7
Subcommittee on Financial Aid............................ 11
Subcommittee on Advising and Retention............................ 14
Ph.D. Education............................ 20
Professional Education............................ 25
International Dimensions............................ 31
Faculty Development............................ 37
Research............................ 39
Academic Information Environment............................ 42

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Undergraduate Education

This report sketches a new vision of undergraduate education at the University of Pennsylvania. Securely founded on the curricular reforms going forward now and those accomplished in the recent past, it calls for the vigorous prosecution of measures that fill our classrooms with the diverse vitality of this University. It also recognizes that a large piece of unfinished business for undergraduate education at Penn is the nurturing of an encompassing intellectual environment: the shaping of that preponderance of time and space that lies outside the classroom. Such an environment is important for the sustenance and essential to the completeness of undergraduate education.

We believe that the most promising opportunity to build this kind of intellectual community exists within our residence halls. It is there that the normal unity of academic life and academic work may be shared among faculty, graduate students, and undergraduates, and it is there that we may bring together all of the resources of this complex and diverse institution. Although we have defined the central mission of this endeavor as undergraduate education, we believe that it will strengthen the intellectual environment on campus and benefit us all. It will make us One University.

A rapid reading of this report may lead to misconceptions, a few of which can be forestalled here: Our plan is not a copy of the system of colleges or houses of Harvard, Yale, or Princeton; although there are common features, ours is designed specifically to fit the unique circumstances of this institution, most notably our multi-school education of undergraduates. Nor is it a simple expansion of our own College Houses; much more is envisioned than can be accommodated at present, and some important features are changed. The plan is not an usurpation of the curricular responsibilities of the separate schools, but the creation of a shared intellectual environment in which both their distinctive and common objectives may be seen and understood by all. It is not principally a call for new programs; it is largely a strengthening and development of what is already in place. It is not a plan for massive new construction, although much of what is proposed can be done better if some capital is invested in bricks and mortar. Most importantly, our concern is not with the residences per se; although we believe that they offer an extraordinary opportunity for development, our purpose is to use them to enliven the intellectual climate in which undergraduate education occurs. Undergraduate education also demands the energetic pursuit of other objectives, which are noted below.

1. Introduction

A great university offers an extraordinary variety of intellectual opportunities to undergraduates. Although the very richness and complexity of these resources at the University of Pennsylvania can be daunting, we remain dedicated to the principle that our students can participate in and benefit from our complicated vitality. Since 1973 the framework for presenting our various riches to undergraduates has been the concept of "One University," as articulated by the University Development Commission. Its ringing pronouncement then was that "the University of Pennsylvania should be an institution which sees life whole." In his charge to this Working Group, the Provost reiterated the importance of that idea.

The principal challenge in planning for undergraduate education over the next five years will be to create more academic connections among Penn's undergraduate programs, actively engaging the interests of the four undergraduate schools—their deans, faculties, students, and staff—along with the ideas and energy of the University's graduate and professional schools. The task is important and complex in both organization and goals. The major objective is to encourage undergraduate programs that are distinctive, as well as distinctively and inherently "Penn."

The Working Group agrees with the Provost's assessment. We are convinced that our educational distinctiveness lies in the proximity in which this University places the liberal arts and the professions. We also believe that undergraduates in all of our Schools can benefit from this extraordinary collocation. Most of them, in the College and the three other Schools alike, will enter what we usually call "the professions," and their education should take this fact into account. At the same time, since their future professional activities will help to shape our civilization, it is also important for all undergraduates to understand the structure and history of civilization as reflected in the liberal arts.

This report therefore addresses the general issues of education and intellectual life within the University, focusing on matters which we believe will help to fulfill our commitment to One University.

2. Curriculum: The Foundation

During recent years Penn has committed itself with notable enthusiasm to the reconsideration of undergraduate education, and our successes have been substantial. The Provost and the deans who bear responsibility for undergraduate education must now see to it that some of these successes are consolidated and that the work in progress reaches fruition. While we do not recommend any substantial alterations in the direction of curriculum development, we believe that active management in the following areas is essential, paying special attention to those matters which define the experience of first-year students:

1. All of the undergraduate schools have made substantial commitments to liberal arts "general education." This has placed growing demands on the General Requirement courses offered by the School of Arts and Sciences, and the support and development of these courses demands unflagging attention. Suggestions for the coordination of this shared first-year curriculum are contained in section 6.4, below.

2. Increased faculty participation from across the University in the small freshman seminars offered by the College has enriched the experience of all first-year undergraduates. We should see to it that no first-year student is denied the opportunity to enroll in such a seminar. The support of this important inter-school endeavor will require the close attention of the deans and Provost.

3. All of the Schools have made strong efforts to develop the writing and communication skills of their students through Writing Across the University (WATU) and a variety of school-specific requirements. The Program in Reading, Analysis, and Expression, now being devised by the College, will be the next significant addition in this area. Strong support for these programs in the schools and their effective coordination are essential.

4. Undergraduate research opportunities—which convert Penn's research strengths directly into teaching assets—have been promoted across the University, supported by the Rose Fund and the Nassau Fund. We need to enlarge the number of such opportunities, denying no student the opportunity to participate in the University's expansion of human understanding.

5. Opportunities for cross-school study have increased, including such dual degree programs as the very successful Management and Technology program. Sections 6.1 and 6.2, below, recommend further action in this important area.

6. The University has rightly begun to pay greater attention to the international dimension of undergraduate education, with a separate report now being prepared by a working group. This area of activity should become a hallmark of the undergraduate education at Penn, and our own recommendations are located in section 6.3, below.

7. Increased emphasis has been placed on teaching excellence. It is becoming a major factor in faculty promotion and tenure decisions, and the training and evaluation of teaching fellows has also received markedly greater attention. More action in this vital area is suggested in section 8, below.

8. Over the past decade the University has made marked progress in strengthening and diversifying its student body. These matters have received the special attention of subcommittees on admissions and on advising and retention.

This is a very notable record of real accomplishments and fertile initiatives, and it establishes an agenda for much further work. But significant as these achievements have been and as important as the future work will be, we do not believe that curriculum by itself can create the kind of educational experience that we desire for our undergradu-
The intellectual environment created on a university campus is not, in our view, just the setting in which academic life and work takes place. Rather, it is that life and work, as well as the prototype for the kinds of life and work our students will be prepared to lead after graduation. We must ensure that a wide-ranging intellectual engagement is the anticipated, desired, and fully-realized experience of every Penn undergraduate student. Thus, proposals for the enrichment of the intellectual environment must not be confused with merely physical and architectural changes in facilities, necessary as these may be. What is needed is more fundamental.

What is needed is an environment in which undergraduates from the four schools and faculty and graduate students from across the University meet and mix in the course of their normal work. Intellectual labor should be seen to merge seamlessly with intellectual life. It is our view that coercion and the creation of artificial bridging mechanisms will not produce these conditions, but it is possible to reorganize the way we do business so that they arise naturally. This will depend more on rearranging what we already do than on creating new activities, although there are some new things that we should have.

One difficulty in designing this common environment is that the University has promoted the well-defined and strongly articulated identities of the four undergraduate schools. In itself, this is a good thing, for the vigorous engagement of the schools' four faculties with curricula suitable to their students is the backbone of excellence in undergraduate education at Penn. (Their most recent achievements are summarized above and catalogued in an Appendix* to this report.) But these circumstances pose a paradoxical challenge: we must build a common intellectual environment without sacrificing diversity or infringing on the curricular autonomy of the individual schools. It is the view of the Working Group that such an environment cannot be created independently by the School of Arts and Sciences, the Wharton School, the School of Engineering and Applied Science, or the School of Nursing; nor should it be imposed by administrative fiat. What is required is an integrating force that touches the lives of undergraduates and faculty in each of the four schools: a fifth focus for many of the curricular and extracurricular experiences that our students and faculty already share and an environment that will also foster new kinds of intellectually stimulating and integrative activities.

4. The Residences as a Fifth Center: First Principles

Almost unnoticed, such an instrument has gradually begun to emerge. Within a residential system that can house about 61 percent of our full-time undergraduates, we have created College Houses and several other innovative living-learning programs. Over the past decade these have begun to fulfill the desire of both faculty and students for interdisciplinary, cross-school, and other shared experiences and for an environment rich in intellectual excitement. It is the view of the Working Group that a major effort should be made to expand an enriched residential system at the center of the undergraduate experience. We believe that this may be the only way—certainly, it is the least disruptive and tendentious—to realize the vision of One University in this multi-school institution. Furthermore, such a strengthened intellectual environment that taps the resources of the schools and is centered in the residences will be something that is distinctively our own.

Four guiding principles have shaped our recommendations:

1. The academic mission of the University must be reflected in everything we do that shapes the experience of our undergraduates.

2. In the residences, we believe that a more active and better recognized presence of faculty members and graduate students is a necessary part of the University’s mission. This is an important resource for transforming the residences into stimulating intellectual communities. We expect that such an enlarged residential role for the faculty will require a significant modification of the governance structure for university residences.

3. Residential buildings should be made a major arena for substantive activities that foster intellectual interchange among the Schools and their faculty, graduate students, and undergraduates.

4. Access to the intellectual environment of the University is the right of all students. The University should commit itself to provide residential space for all those who wish to live on campus. Over the years ahead this may require new construction and/or the integration into the residential system of the University-owned apartment buildings that stand on the periphery of the campus. We must also provide ready access to the resources of the residential system for those who choose to live elsewhere.

5. The Residences as a Fifth Center: Some Characteristics

We believe that the following features should be present in the residences.

1. Diversity and Common Purpose. It is expected that the various units of the residential system will continue to differ in terms of the interests of residents, types of activities, amount of programming, and architectural setting. Organizational structure may also vary. But it is proposed that all students be provided with certain core services, essential to the intellectual life of the university. These should include some residentially located curriculum and advising, attractive space for study, and access to the electronic information environment.

2. Faculty Presence. This presence must be real. More faculty members should be present in the residences, and they should have genuine leadership responsibility. A faculty master should embody that leadership in each unit of the system. She or he ought to be joined by other resident and non-resident faculty members with real roles to play as mentors (see 5.5), members of research centers or offices located within the residences (see 5.11), or as occupants of personal offices located there as well. But in general, a highly visible group of faculty should do a large part of their work in the residences.

3. Curriculum. Classrooms located in the residences should be used for an increased part of the undergraduate curriculum, overseen as now by the faculty of the four undergraduate schools. We should seek to bring students and faculty together in a friendly setting where classroom discussions can be continued in an adjacent lounge or dining room. The residential setting can also supply the locus and the structures for joint faculty-student academic planning. Such planning has already produced the blueprint for one such collaborative learning model for calculus, in which teams of students, living together, work on course assignments designed to be done by teams. In addition, faculty masters would be expected to encourage the creation of educational programs that bring the consultants to the home of faculty associates from the four schools and draw in professional and graduate school faculty who are not normally available to undergraduates.

4. Professional and Graduate Student Presence. It is proposed that a substantially increased percentage of residence rooms in the present undergraduate dormitories be occupied by graduate students, selected from all of the schools of the University. Some of these students would serve the advising system (see 5.5, below) while others would have no responsibility other than their own work.

5. Advising. This is an area in which there has been much criticism. We believe that a combination of decentralized services and cross-school coordination offers an excellent opportunity for improvement. A large part of the advising of first year students should be shifted physically into the residences, while retaining

* The Appendix is Recent Developments in Undergraduate Education, updated by Dr. Stephen Steinberg from the report of that title in Almanac: March 21, 1989, is on file in the Office of the Provost 102 College Hall/6306.
supervision by the four undergraduate schools and some centrally
located resources. This would place advising in a convenient location
for students, integrate the available information about the four
schools, and promote One University through increasing contacts
among the several faculties. For this endeavor, it is necessary that
access to student records be available in the residences.

One proposal for such an advising system follows:

Each residence would have one or more advising coordinators in
addition to the mentors. Each of the four schools would also assign the
appropriate number of “mentors” to each residence. These mentors
might be those who already serve as faculty and professional advisors
in the schools, and together they would make up the core of the senior
associates of each residence. In addition, graduate students and
undergraduate Residential Advisors would have important but essen-
tially informal advisory responsibilities. Advising services would be
guided by two interlocking and cooperative systems: the undergradu-
ate deans would supervise the mentors appointed in each of their
schools, with complete authority over matters of curriculum; the
masters and advising coordinators would coordinate the work of the
mentors within each geographical unit of the system, paying special
heed to questions that arose within that setting. We expect that the
professional and social contacts among mentors, Deans, and masters
would be frequent. (See also 5.15.)

6. Dining and Facilities Management. Communal dining, at-
tracting both students and faculty, is essential to the vitality of a
residential academic community, and separate dining facilities should
be provided for each unit of the residential system. Responsibility for
preparation and serving of meals and for on-campus dining must be
assigned to the residential system in order to support the intellec-
tual purposes of the University. All other aspects of residential
physical plant should be controlled in the same way.

7. Library. Each residential unit must be provided with a large,
permanently assigned room for quiet study. This must not be residual
space, and it must be managed actively. Although book collections
will necessarily be very small and designed to serve the requirements
of popular undergraduate courses, in some cases it will be possible to
tailor them to the special interests of the residents.

should be provided in all residences.

9. Coffee Houses and Flexible Space. A substantial amount of
flexible space should be provided in each residence to meet the
changing requirements for social interaction.

10. Other Facilities. Insofar as possible, the residences should
be equipped with the means to support student interests in music,
photography, theater, etc. All units need not have the same facilities.

11. Offices and Research Centers. The University should locate
in the residences some of those activities that reflect its integrated
life. Offices and academic or scholarly programs that stand between
and among the four undergraduate schools should be considered for
such placement; e.g.: Chaplain, Ombudsman, International Pro-
grams, General Honors, Teaching Resource Center, Writing Center,
tutoring services, University Art Collection, President Emeritus’
office, OCOPS, Dual Degree Program Office (see 6.1 below), inter-
disciplinary research centers, etc. In reviewing such facilities for
possible relocation, the merits of absolute centrality of location
should be weighed against the advantages of an integrated environ-
ment of life and work.

12. Community Action. The residences should be used to support
community involvement projects (like WEPLIC and OCOPS) and
voluntarism in general. Penn Extension might be located in a
residence.

13. Campus Center. Programming and planning for the Campus
Center should be coordinated with the proposed strengthening of the
residential system in order to avoid conflict and duplication. The
Center’s principal aim should be to supply large facilities and those
that require a central location.

14. Non-Resident Undergraduates. Students who live off cam-
pus, most of whom are juniors and seniors, should be provided with
the same essential services that resident students will find in resi-
dences. This might be readily achieved by associating all off-campus
students with an on-campus residence where they could meet with
advisors and take meals.

15. Governance and Administration. The governance and ad-
ministration of the residences will require the coordination of three
sectors of the University: a Council of Faculty Masters, the Council
of Undergraduate Deans, and the Office of the Vice Provost for
University Life. The Council of Masters should represent the
interests of resident non-undergraduate faculty associates, placing
constant emphasis on the intellectual life of the residences. As the
“on the scene” component of the triad, they will bear primary
responsibility for overseeing day-to-day programming. (The chair-
man of the Council of Masters should be an ex officio member of
the Council of Undergraduate Deans.) The deans should represent
the vital interests in curriculum and advising of their respective fac-
ties. The Vice Provost’s office should provide support for these
programming and educational activities while directing the central-
ized operation of services. The VPUL should also represent the
residential system before the Capital Council. Overall responsibility
for the system should rest with the Provost.

6. Curricular Bridges: An Inter-School Curriculum Coordinating Committee

In addition to the broad initiative for the residences outlined above,
the Working Group also recommends continuous vigorous support for
curricular programs that connect the undergraduate schools. Since
curriculum is properly the responsibility of the faculties of the four
schools, we recommend the creation of an Inter-School Curriculum
Coordinating Committee (ISCCC) under the direction of the Council
of Undergraduate Deans to help the deans to define common interests
and coordinate efforts in building curricular bridges. The ISCCC
should combine representation from the curriculum committees of the
four schools, and it should be charged with four areas of responsibility:

1. Dual Degrees. Our present dual-degree programs are of two
kinds: (a) the generic dual-degree, awarded to students who fulfill
the ordinary degree requirements in two schools, and (b) the topo-
cally-focused dual-degree, awarded by special programs with a
single set of requirements that are approved by the faculties of two
schools. Both of these important bridging capacities, however, are
both needed strengthening. At present, students pursuing generic degrees must
negotiate their way through the advising systems of the two schools,
while faculty seeking to establish topically-focused programs must
rely solely on the good offices of the relevant schools.
The Working Group therefore recommends that the ISCCC guide
the undergraduate deans and the Provost in establishing an office
(perhaps located within the residential system) to support dual-
degree students and faculty. In such an office, advisors from the four
schools would be regularly and jointly available to students seeking
generic degrees, and the directors and faculty of topically-focused
programs could find clerical support and administrative expertise.

2. Cross-School Majors and Minors. At present, only a few ad-
 hoc arrangements allow students to take major and minor programs
in Schools other than their own and have those programs appear on
their transcripts. The Working Group urges that all major and minor
programs be made available to all undergraduates who fulfill the
stated prerequisites, regardless of school. The Council of Under-
graduate Deans and the ISCCC should be charged with maximizing
the accessibility of these programs.

3. The International Dimension. Study abroad is one of the
intellectual adventures shared by Penn undergraduates in all Schools.
The expanding internationalism of the campus is also reflected in the
growing consensus that the study of a foreign language is an essential
part of undergraduate education. The Working Group believes that
international study is vitally important to modern academic life,
and it recommends that the ISCCC advise the undergraduate deans and
the Provost in establishing an Office of Foreign Study or enlarging
the Office of International Programs. The ISCCC should then guide
such an office in designing one or more “concentrations,” open to
undergraduates in all four Schools, which make use of both interna-
tional curricular resources at Penn and opportunities for study
overseas. Such an office might be located within the residential
system and should arrange programs in the residences whenever
possible.

4. Senior-Freshman-Sophomore Curricular Experience. Recent
classes in undergraduate curricula have created (or promise to
create) substantial commonality among the studies of freshmen and sophomores in the four schools. The coordinated use of shared resources for general education will require the close attention of the Council of Undergraduate Deans and the ISCCC. Moreover, the Council and the ISCCC should be charged with recommending to the faculties of the four schools measures for furthering the common use of curricular resources.

7. Honors Programs

The University of Pennsylvania has an obligation to serve the intellectual interests of an exceptionally gifted group of undergraduates, and this requires the wise formulation and generous support of honors programs. Existing programs include the Benjamin Franklin Scholars, Joseph Wharton Scholars, Penn Medical Scholars Associates, University Scholars, General Honors, and the honors programs run by many departments and academic programs.

These honors programs can and should fulfill three functions: (1) inducing the finest students to enroll at Penn, (2) serving the interests of departments and academic programs. Existing programs include the Benjamin Franklin Scholars, Penn Medical Scholars Associates, University Scholars, General Honors, and the honors programs run by many departments and academic programs.

In particular, we recommend the creation of a University-wide committee to study these questions:

1. What are the attractions which honors programs hold for applicants? How can (and should) they be used for recruiting? Does the existence of elite programs give the erroneous impression that the rest of the University does not satisfy the needs of gifted students?

2. How can each school recognize and nurture the work of the best students who enroll at Penn? How should students be selected? Should these programs be based separately in each school or linked together?

3. How can the activity of honors programs serve as a catalyst for the intellectual vitality of the entire campus?

8. Teaching Excellence

Excellent teaching is essential for excellence in undergraduate education. We cannot waver in our support of that principle, nor allow the discussion of mere “competence” in teaching to divert attention from what should be a more ambitious agenda.

No single definition of excellent teaching will be applicable at the University of Pennsylvania because of the diversity of talent among the scholars who teach here and because of the diverse kinds of teaching required in our many disciplines. We should therefore foster innovation and experimentation on many educational fronts at the same time.

1. The Need for Data. We lack many of the kinds of data needed for the most effective support of excellence in teaching. The Provost and the Council of Undergraduate Deans should commission studies of the following issues:

   a. The use of teaching evaluations in promotion and tenure.
   b. The types of questionnaires used for the evaluation of teaching.
   c. The longterm effectiveness of teaching as reported by alumni.
   d. Grading philosophies and systems.
   e. The effectiveness of present inducements for good teaching (awards, salary increments).

2. An Interim Agenda. Certain essential policies and organizational structures for the support of excellent and innovative teaching should be put in place by the Provost and the deans even before the studies suggested above are undertaken:

   a. We ought to give substance to our boast that we demand excellence in scholarship and excellence in teaching from our faculty, recognizing wherever possible the constructive interaction between these two parts of academic work. Specifically, we should not emphasize the reduction of teaching responsibility as a reward for faculty achievement if we intend to show that one of the most important kinds of faculty achievement is excellence in teaching.

   b. We should provide better rewards for good teachers. The present system of a small number of infrequent, individual awards is generally ineffective. In its place we recommend a larger number of smaller awards that encourage continued development and experimentation. Some of these might be designed as research support for excellent teachers, thereby emphasizing the necessary connection between these two parts of academic life. Other awards might be effectively directed toward departments, promoting a sense of collective responsibility and achievement that should have a larger impact on undergraduate education.

   c. We should provide excellent facilities for teaching.

   d. We should create a “teaching resource center” for the University which offers services to both graduate students and members of the standing faculty. Under the guidance of a faculty governance committee, it should promote the educational experimentation and self-improvement appropriate in a large and complex university.

   e. We should promote outside, national awards and recognition for excellent teaching.

   f. We should use the review processes of promotion and tenure to insure that our faculty consists of competent teachers, and we should work diligently to foster the creation of a faculty consisting of great teachers.

9. Conclusion

We know that the resources for undergraduate education at the University of Pennsylvania are enormous, and they contain the potential for a shared intellectual environment of unparalleled vitality. The next five years should see us accomplish these objectives:

1. Consolidate the successes and complete the work of the present generation of curriculum reform.

2. Assemble the components of a fifth center in the residences.

3. Establish a mechanism for coordinating and promoting the growing part of undergraduate curriculum that is shared by the four schools.

4. Review and strengthen honors programs.

5. Take concrete steps to promote excellence in teaching.

We have sought here to identify some of the principles around which an environment for undergraduate education might be constructed, but this is a sketch, not a construction drawing. We welcome its careful review by our colleagues and friends.

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**Subcommittee on Admissions**

Recent trends in the United States pose serious challenges for the admissions policy and strategy of undergraduate academic institutions. College-age cohorts have been steadily decreasing in size and demographic features of the population have been changing. The aims and aspirations of faculties and administrators at top-level schools and of students often seem to diverge. Throughout the 1980s Penn has taken numerous steps to meet these challenges and has firmly established itself as one of the most desirable and selective undergraduate institutions in the country. The size and academic strength of the University’s applicant pool have increased markedly. At the same time matriculations and the overall size of the undergraduate campus population have also risen over time. These two factors do tend to oppose each other and the balance between them can be delicate. The task confronting Penn is to sustain its recent gains in admissions and to continue to improve in this area. The primary challenge the University faces is how to enhance the present intellectual strength and breadth of the undergraduate student body and at the same time continue to increase in diversity. A related concern is retention, specifically the rate of graduation and the length of time until graduation.

This report addresses several fundamental questions: What types of students does Penn want to attract, and what must it do to succeed in enrolling and retaining them? Have undergraduate campus programs and the general undergraduate campus environment changed to accommodate the substantial growth in the size of the student body and the increase in intellectual strength? What new academic programs and environmental structures will be required?

Penn’s recent success in developing a larger applicant pool and in matriculating a stronger and more diverse student body has been achieved to some extent through aggressive and successful marketing. The staff of the Office of Admissions is a highly creative, imaginative, and skilled group of individuals, and the University has provided it with considerable resources. In addition, despite smaller college-age cohorts, the percentage of the population aspiring to attend top-level institutions has been steadily increasing. For the future, however, new initiatives and some major structural changes will be required if Penn is to improve its competitive academic position and continue to become more diverse.

The admissions process seeks to attract academically superior students and to achieve a student body that is diverse and sensitive to educational and ethical values. Perhaps the most formidable admissions challenge facing the University is that of attracting a larger proportion of the most academically gifted students. A number of campus groups and committees have addressed this issue. This Committee believes that success in this endeavor, and in other challenges in the area of admissions, will come about only if Penn devotes more attention to undergraduate education and the general quality of undergraduate life than it does presently, and if fundamental structural changes are instituted to implement this increased emphasis. Faculty involvement in the admissions process will be required, and also greater faculty attention to undergraduate students, both inside and outside the classroom. Class size and the size of the undergraduate student body are at the same time fiscal matters and issues which have impact upon the image of the University, the quality of the education it delivers, and the general tone of life on campus. This Committee believes that long-range planning with regard to size of the undergraduate student body is needed and that the primary consideration in the establishment of policy must be the quality of undergraduate academic programs and life on campus. In addition, sustained efforts to attract a diverse student body and to conduct institutional studies to assess admissions practices will be required.

### Undergraduate Education and the Undergraduate Environment

To achieve its admissions goals Penn must work to foster an intellectual and cultural atmosphere that will draw talented and distinctive individuals and a diverse student body. Some fundamentally new programs, greater attention and direction at the undergraduate level, and new facilities are needed to achieve desired goals. In recent years a number of steps have been taken 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 colleges, and increased participation of senior faculty in freshman seminars. These steps have been useful assets in the recruitment of new students and represent important improvements. However, they do not adequately address a fundamental underlying problem, that undergraduate education and undergraduate campus life receive relatively too little attention from the Faculty. Moreover, the outside perception of Penn is that its strength lies in the professional schools and graduate programs. The attention devoted to undergraduates must increase if Penn is to attract more intellectually gifted students and achieve a better undergraduate campus environment; faculty members will have to play the major role in this endeavor.

Two examples of increased attention given to undergraduate education may be found in the School of Engineering and Applied Science and the School of Nursing. In Engineering every faculty member must teach one undergraduate course each year, and in Nursing every faculty member serves as an adviser to undergraduates. These examples highlight two current problems at the University and effective efforts to address them.

In the long run, the institution of new programs, the strengthening of current programs, and, where appropriate, introduction of new campus facilities may prove to be the most profitable methods the University can employ in the recruitment of intellectually gifted students and diverse freshman classes. The establishment of an effective advising system in the College of Arts and Sciences that will be used and respected by both students and faculty is a step critical for improvement of the undergraduate environment. Alternatives and methods of assigning advising responsibilities to faculty members should be explored. Instruction within the residence units should be instituted. Faculty members should play a greater role in undergraduate campus life outside of the formal classroom. More faculty housing on and adjacent to campus and increased faculty attendance at extracurricular events would considerably enhance intellectual life on campus.

These issues and suggestions raise some difficult questions. If more attention is devoted to undergraduate education and life, will research and professional programs suffer? There are many faculty members who are already heavily overcommitted. It is hard to imagine how many will be able to shift their efforts to accommodate greater attention to undergraduates. The required balances are likely to be delicate and difficult to resolve. This Committee is advocating that dialogue and long-range planning are required, and that greater attention needs to be given to undergraduate problems and concerns than is currently the case. Unless this occurs, it is difficult to imagine how the University can begin to attract a greater proportion of intellectually gifted students and maintain diversity.

### Faculty Involvement in the Admissions Process

The Handbook for Faculty and Academic Administrators states (1989 edition, page 19): “Subject to general policies established by the Trustees, the responsibility for determining the quality of the student body shall rest with the Faculty of that school. Each Faculty shall articulate the criteria for selection of applicants for admission and shall establish a written admissions policy that describes these criteria. Each Faculty shall also monitor implementation of its admissions policy and amend it when necessary.” In a statement of guidelines for admissions policies and procedures (page 63), the Handbook outlines three parts of the admissions operation, the legislative, administrative and monitoring functions. About the first and the third of these it states: “The legislative function is essentially a determination of educational policy. Accordingly, the guidelines place responsibility for this function on the several faculties after appropriate consultation with administrators and student groups... The monitoring function is, in major part, a responsibility of
each faculty. Regular review of prior experience provides a basis for possible amendment of the admissions policy and assures that the prevailing policy's standards are being carried out faithfully." Moreover, the 1967 report of the committee on admissions policy headed by Dan M. McGill states: "...the Committee urges that the admission policy of the University be kept under continual review by a body composed primarily of faculty members, in order to adapt the policy to changing circumstances and goals." The admissions dictates in the Handbook are not being followed at present. Recently the Senate Committee on Educational Policy called for the formation of an admissions committee within each of the colleges, consistent with the language in the Handbook. This Committee strongly endorses the Senate committee's recommendation. The committee should be charged with oversight responsibility for admissions policy in their schools and should report each year to their faculties about the quality of the entering class, plans for recruitment, and changes in admissions policy.

The outputs of the individual college committees will need to be coordinated with and consistent with a centrally organized and managed admissions policy in which faculty members are involved. It is crucial that faculty members participate in planning of admissions policy. They should also play a role in recruitment efforts and in oversight. Some of these efforts will take place within the undergraduate colleges, but many of them will need to be centrally organized, in conjunction with the work of the Admissions Office.

In recent years the Admissions Office, in consultation with the University administration and the deans of the undergraduate colleges, has implemented some changes in University admissions policy and practice. These have included increasing class size (see Tables 1 and 2), increasing the percentage of minority students on campus, and working to achieve greater geographical diversity in the matriculating classes, including the recruitment of international students. For the most part, in recent years the Faculty has seemed content to let the Admissions Office and the administration formulate and implement admissions policy. However, some of the changes have generated protests and some faculty members. In some cases the complaints have stemmed from disagreement with the changes themselves, and in other cases from the lack of consultation about the changes.

Greater faculty participation is needed in recruitment generally. Presently most of the work is done by the professional staff of the Admissions Office and very little by the Faculty. This work includes travelling off campus to high schools and meetings, evaluating applications, recruiting on the campus, and admission selection. Some faculty members do take trips off campus, meet individuals and groups on campus, and aid in selection decisions. Recruiting is perhaps the function of admissions in which some faculty are most materially involved. Through communication from the Admissions Office, information about promising applicants and essential applicants is passed along to the individual colleges, which are then able to initiate personal contacts. This procedure has worked well for Engineering, Nursing, and Wharton. For the College of Arts and Sciences, size has been an inhibiting factor. In some cases the information is passed along to individual departments to make the contacts. Effective methods are needed to implement this practice in a more widespread manner in the College. Approximately 75 per cent of the students who enroll visit the University before they matriculate, which suggests that there are many opportunities to effect contacts between faculty members and candidates.

Table 1
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Size

The size of matriculating classes is a fundamental issue for admissions. It affects the financial position of the University and the general quality of undergraduate instruction and of undergraduate campus life. As the size of the undergraduate population increases, there are numerous effects. Classes in general become more crowded, critical bottlenecks develop in certain introductory and intermediate level courses, scheduling of courses becomes more difficult for students, and added pressures are placed upon faculty, administrators, and struggling advising systems. In addition, housing and dining facilities become more congested. In summary, the quality of life on campus suffers.

A further effect of increasing size is the need to be less selective in making admissions decisions. The major impact of lower selectivity tends to be borne by the College of Arts and Sciences, as the entering classes in the School of Engineering and Applied Science, the School of Nursing, and the Wharton School are comparatively small and for various reasons are, apart from sharing the experience of greater crowding on campus, minimally affected by marginally lowered selectivity. Lower selectivity not only affects life on campus in general, but also the perception of the University by other institutions and the outside public, and hence its ability to attract in the future applicants and matriculants of the highest quality.

Table 1 shows application, admission, and freshman matriculation figures for the period 1956-1988. The figures are noteworthy. The most dramatic features they point to are the enormous growth in the size of the applicant pool and an almost doubling of the number of matriculants over the 30-year period. The admit rate hovered around 40 per cent in the late 1960s, around 50 per cent in the 1970s, around 40 per cent in the early 1980s, and recently it has fallen below 40 per cent. The yield rate has remained relatively constant over the entire period spanned by the table, at about 50 per cent (with slightly higher percentages during the mid-1960s and slightly lower percentages during the early 1980s). The University’s admit rate is higher than that of many peer institutions, especially those in the Ivy group. Among Ivy group schools Penn’s yield on admissions is higher than that of Columbia and Cornell, comparable to that of Brown, and lower than that of Dartmouth, Princeton, Yale and Harvard. Four figures [on file in the Office of the Provost] give some descriptions of the academic strength of the applicant and matriculant groups during 1981-1989. Figure 1 refers to the applicant pool. It shows the percentage of applicants with predictive index (PI) greater than or equal to a given amount. (For an explanation of the PI see Section 5.) All of the curves pictured indicate a general upward trend over time. Figure 2 deals with the group of admitted applicants. It displays the percentage of admitted applicants with predictive index greater than or equal to a given amount. Figure 3 gives the same information for freshman matriculants. Most of the curves in Figures 2 and 3 show downward slopes for the period 1982-1984, followed by steady upward trends. It is evident that in recent years the strength of the applicant and matriculant groups has been increasing noticeably. Further, Figure 4 pictures the selectivity of the admissions procedure. It shows the percentage of applicants admitted with predictive index greater than or equal to a given amount. Increasing selectivity over time is evident for all ranges of the PI. (The downturn in selectivity in 1989 was due to a 13 per cent decrease in the size of the applicant pool versus the period 1985-1988.)

Table 1 clearly shows that there has been a policy to increase the number of freshman matriculants over time. During the early 1980s the target figure was 2100 and recently it has been 2250.

It is necessary to consider also the size of the entire undergraduate student body. Table 2 displays fall semester enrollment figures for the years 1976-1988. (Students who are off campus for the fall semester, e.g., to attend a foreign exchange program, are not counted in the figures.) Sources of the annual changes are shown to give a clear assessment of the flow of undergraduate enrollment over time. During the 13-year period enrollment increased from approximately 8300 to approximately 9700. The School of Engineering and Applied Science, which currently houses 1,300 undergraduates, had only 475 in the early 1970s. The rise in enrollment is attributable to several factors:

1. Freshman matriculation has increased at a rate which outstrips the decrease in transfer matriculation. Most transfer students who remain to graduation stay on campus for a shorter period of time than incoming freshmen who remain to graduation. (2) There is evidence, not presented in this report, which suggests that many students are now taking longer to graduate than was previously the case. This factor is at least partially responsible for the recent rise in the reenrollment percentage. (3) A possible third factor for the latest three or four years is that fewer students are taking leaves of absence or permanently leaving the University before attaining graduation.

While total undergraduate enrollment has been rising, the size of the standing faculty in the undergraduate colleges has also been increasing. Table 3 gives figures for the period 1978-1987. The student-to-faculty ratio for this method of counting has varied between 11.4 and 12.3.

The Subcommittee on Admissions supports the position of reducing the present size of the undergraduate student population, or at least not permitting it to grow further. The quality of undergraduate education and undergraduate life provides the arguments in favor of a reduction of size. Management of size requires attention not only to freshman admission, but also to acceptance of transfer students and to careful study of the reenrollment rate. It is worth noting that the Council Committee on University Admissions and Financial Aid has for a number of years urged the University administration not to increase the size of the freshman class.

It is clear that reduction of enrollment involves financial considerations. However, priorities must be established and some hard decisions made. Steady inflation of the size of the undergraduate population is bound to erode the quality of education and life on campus. It is necessary to implement a planning process to determine size at least several years into the future and alter the present practice of using size to assist in adjusting budget numbers on a year-to-year basis. Size should be set first on educational grounds and to maintain and enhance the integrity of the University, and then the budget should be designed accordingly.

Follow-up Studies

Section IV of the McGill report begins: “The admission procedures proposed herein should be kept under continual review by the [University Council] Admissions Committee to make sure that they are producing the results intended. This surveillance can be made far more meaningful if it is accompanied by an imaginative research program by the appropriate offices of the University.”

Current research efforts are seriously handicapped by lack of personnel and the sparseness of relevant data in a form that can be processed...” Continuing, the report adds: “The opportunities—and need—for research in this area are almost boundless. The most obvious need is continually to test and refine the predictive indices. As a minimum, the objective indicators of academic success should be tested against the grade point average for the entire four years rather than just the freshman year.”

In recent years the Committee on Undergraduate Admissions and Financial Aid of the University Council has affirmed a strong commitment to the conduct of follow-up studies of admissions policies and procedures. In addition, the Handbook for Faculty and Academic Administrators specifies the monitoring function for admissions, as noted above. Despite these documentation efforts, the studies have tended to be undertaken sporadically and on a limited scale. A greater level of

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*College, Engineering, Nursing, and Wharton
administrative commitment is needed. These studies are critically needed in order to have an informed view of current practices, to assist in the formulation of policy and the revision of present procedures, and to take steps to remedy certain difficulties students experience. Within the last few years more administrative attention to these studies has been evident and this is a promising sign.

The predictive index (PI) currently used in admissions is designed to estimate the freshman year grade point average. It is one of the items of evidence employed by the Admissions Office in deciding whether to accept or reject an applicant. The calculation of the PI is based upon SAT scores, achievement test scores, and rank in the high school graduating class, the last converted to the same scale used for the test scores. Weights assigned to these three variables are those determined from a regression analysis using the actual data from a freshman group in the past. The correlation between PI values and freshman year grade point average has been approximately 0.50 in recent years.

Applicants are divided into nine academic groups defined by PI values. Presently a few applicants in academic group 9, the top group, and 5 per cent 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 reevaluated. One possibility is to assign a faculty committee to screen all such rejections before they become final.

Efforts should be undertaken each year to revise the PI parameters to account for fluctuations in campus grades and trends in standardized test results. The Committee urges further that refinement of the PI be explored on a continuing basis.

The following is a list of examples of studies of the admissions process. It is not intended to be comprehensive.

1. What is the retention rate for matriculants? How does this fluctuate for various student subgroups? Can a PI for retention be developed?

2. How does the present PI correlate with grades beyond the freshman year?

3. How does the present PI correlate with the graduation rate? Explore the formulation of an index to predict graduation. Indeed, in 1967 the McGill report noted: "...it is useful to establish for the record the Committee's conclusion that the minimum academic goal of our admission policy must be to select students who have the potential of meeting all the requirements for graduation within the normal time span." There is presently evidence that the length of time to graduation is increasing for some segment of the student body. What are the graduation rates and time spans for various subgroups? What can be determined about the number of credit units completed per semester and its correlation with the PI, or with a graduation index?

4. To what extent are students accumulating and failing to resolve incomplete grades?

5. How does student academic performance vary by courses, by disciplines, and by quadrants?

6. Why are some students choosing to leave the University before they graduate? It should be the policy of the University to attempt to conduct and document a comprehensive exit interview with each student who leaves.

Diversity

This Committee reaffirms the McGill report assertion: "The admission policy of the University should be designed to produce a student population having the highest possible diversification as to (1) intellectual interests, (2) special talents, (3) social and economic background, and (4) cultural characteristics." The McGill report also states that "...diversity of student background is a positive educational value and should be actively pursued, even at the expense of other desirable attributes." And further, "...the Committee registers its firm conviction that, in combination with integrity, the quality that should be sought above all others in a student body is intellectual power. A university exists to nurture the intellect and all other goals must be subservient to this fundamental purpose." The present Committee strongly endorses this position and emphasizes the special need for intellectual diversity and intellectual curiosity in the undergraduate student body.

The Admissions Office has for a number of years and continues to be very successful in recruiting minority students. The success of this effort must be accompanied by the presence of a climate and an environment on the campus that are hospitable to all segments of the student body and that will permit all students to grow and develop to their fullest potential, and effective programs to realize these goals. This Committee believes that the validation studies discussed in Section 5 are a critical feature of plans to continually improve and develop all aspects of campus life.

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
Amy Johnson, Planning Analysis
Subcommittee on Financial Aid

The Subcommittee on Financial Aid of the Provost’s Working Group on Undergraduate Education was charged with determining Penn’s goals and priorities for undergraduate financial aid, considering financing options and packages to make Penn more affordable for greater numbers of students, and monitoring the start-up of the Office of Student Financial Services. The group has been meeting regularly since early October and feels it can now articulate desirable goals and priorities for undergraduate aid at Penn, as well as propose innovative ways of financing a Penn education and funding the undergraduate aid budget. Some of our suggestions imply expanding the current programs offered by the Office of Student Financial Services.

Role of Financial Aid

Penn seeks an academically talented and diverse student body. Financial aid policy should further this goal through the appropriate packaging of grants, work opportunities, and loan programs. Generally, financial aid should be seen as more than a tool for enabling the most needy students to attend; it should be seen as a way to make institutions like Penn affordable to essentially all applicants.

While financial aid policy should assist in attracting desirable students, it should not be a surrogate for admissions policy. The faculties of the four schools that administer undergraduate programs have statutory control in this area. They, in conjunction with the Provost, must determine the substance of Penn’s admissions policy. This fact notwithstanding, in no case should a student’s financial situation affect either his/her admittance or his/her ability to attend Penn once admitted. The subcommittee unequivocally supports the current philosophy of need-blind admissions and meeting full need.

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. The Ivy Group Agreement creates an environment where one school is not more financially attractive than another. The subcommittee affirms the University’s commitment to the agreement. Potential students should choose to attend an institution on the basis of intellectual and academic, not financial, criteria.

The subcommittee also generally supports the current processes of determining need and packaging aid. Need is calculated by subtracting the expected parent and student contributions from the cost of attendance (tuition, fees, room and board, and miscellaneous). The parents’ contribution is determined through a Congress-mandated methodology that considers the parents’ income and assets. University financial aid officers are free to modify the methodology if unusual circumstances in the parents’ application warrant such treatment. 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—for example, a National Merit Scholarship, Kiwanis Club grant, or private corporation grant—the self-help component of the aid package will be partially reduced so that the student receives some benefit from the grant. Self-help consists of the expected parent and student contributions. University financial aid officers are free to modify the methodology if unusual circumstances in the parents’ application warrant such treatment. The students’ contribution is based on the students’ savings and anticipated summer earnings.

As part of the annual budget process, the Office of Financial Aid, in consultation with the Admissions Office, develops various possibilities for self-help levels, as well as objective criteria that define package eligibility. These scenarios are presented to the Provost, who, in consultation with other senior officers of the University, decides which packaging policy to implement. The subcommittee feels that the current packaging process is a reasonable way of furthering institutional goals.

Penn’s Relative Status

The subcommittee wishes to make two points concerning the University’s financial aid status relative to its peer institutions. The first is that Penn does not seem to be losing students in the academically strongest groups to its peers for reasons of financial aid. The second is that Penn’s financial aid budget is severely underendowed.

The Ivy Group Agreement ensures that Penn’s financial aid offers are at least comparable to those of any other Ivy League university or MIT (also a signatory to the agreement). Penn matriculated only 20 percent (26 of 127) of Ivy-overlap students in the fall of 1988 who were offered financial aid and were the most academically competitive students, i.e., those who receive an academic rating of 8 or 9 on a scale of 1 to 9. The bulk of the remaining students matriculated in another institution participating in the Ivy Group Agreement. Since this agreement enables the various universities to share information concerning aid applicants, both the family contribution and self-help components of aid offers for a given student tend to be homogenous across schools. The subcommittee is confident that the low yield rate for the most academically competitive Ivy-overlap students is not due to uncompetitive financial aid offers on the part of Penn.

In the same year, in contrast, Penn matriculated nearly 65 percent (45 of 70) of non-Ivy-overlap students who were offered financial aid and were in the most academically competitive groups. For this group of students the University is competing against institutions that may be offering merit and other non-need-based aid. For the non-matriculating students in this group on whom we have data, one-third went to Berkeley, Duke, or Stanford. Still, we matriculate a very high proportion of these talented students.

Both of these yield rates have been fairly constant for the past several years. The subcommittee feels that revamping Penn’s aid policy would not significantly increase the already high yield of non-Ivy-overlap, academically talented students. Thus, such a strategy would be neither successful nor financially viable.

Financial aid represents a major expense for the University, and almost all of the financial aid budget comes from unrestricted accounts. In fiscal year 1987, undergraduate financial aid accounted for 5.3 percent of the total unrestricted budget. Penn currently has the highest percentage of institutional grants funded from unrestricted sources of all the Ivy League universities, and nearly the highest of the universities in the Consortium on Financing Higher Education. The following table compares Penn with the other Ivy League universities for the 1988 fiscal year:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Total Institutional Grants</th>
<th>Grants from Unrestricted Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>12,288</td>
<td>8,885 (72%)</td>
</tr>
<tr>
<td>Columbia</td>
<td>14,965</td>
<td>NA (- - -)</td>
</tr>
<tr>
<td>Cornell</td>
<td>21,575</td>
<td>16,500 (76%)</td>
</tr>
<tr>
<td>Dartmouth</td>
<td>12,280</td>
<td>8,880 (71%)</td>
</tr>
<tr>
<td>Harvard</td>
<td>19,953</td>
<td>7,500 (38%)</td>
</tr>
<tr>
<td>Princeton</td>
<td>11,586</td>
<td>654 (6%)</td>
</tr>
<tr>
<td>Penn</td>
<td>$25,731</td>
<td>$23,618 (92%)</td>
</tr>
<tr>
<td>Yale</td>
<td>13,381</td>
<td>6,853 (51%)</td>
</tr>
</tbody>
</table>

Except for Penn and Cornell, the proportion of grants funded from unrestricted sources has decreased in recent years. Decreasing Penn’s percentage of unrestricted funds for institutional grants to about 76 percent—the level of the next highest Ivy League university—would require increasing the endowment for undergraduate aid by more than $100 million. While some undergraduate aid endowment will be raised during the capital campaign, it is very unlikely that enough will be raised to alter Penn’s standing relative to its peers.

Penn’s financial aid recipients may be negatively affected by the low level of financial aid endowment. Since the University’s capacity to provide institutional grants must be covered by the operating budget, the self-help component of the aid package must be that much larger, and our students are required to carry a larger debt burden than if the...
endowment were larger and used partially for financial aid.

The lower percentage of institutional aid coming from restricted sources gives other Ivy League schools, to varying degrees, two marked advantages in managing financial aid over the next decade. First, much of the increase in their students’ financial need can be covered through normal annual increases in their restricted endowment income. Second, because their grants funded from general revenue are so much lower than ours, they have much greater flexibility in increasing their unrestricted allocation to undergraduate aid. During a time of declining federal and state support for undergraduate education, funding Penn’s aid budget becomes more and more challenging.

Current Issues

The problem of the low level of endowed support for undergraduate aid is compounded by the fact that there are significant obstacles to increasing financial aid endowment dramatically during the capital campaign. All indicators point toward ever-increasing tuition rates. Recently tuition rates have been rising faster than disposable income; hence families have greater difficulty affording a Penn education. While the University has made up approximately 75 percent of the recent cuts in federal and state aid, this still leaves 25 percent to be contributed by the family. These factors may partly explain why we have seen a decrease in the number of lower-middle income applicants and a decreased yield for accepted applicants from upper-middle income families. The group feels that it is necessary to develop further innovative mechanisms for financing an education at Penn. There is also more that can be done to help students come up with a portion of the aid package through increased job support both during the academic year and over the summer. These issues will be addressed in the following sections of this report.

Fund-Raising for Undergraduate Scholarships. In light of the problems related to Penn’s low level of endowed support for undergraduate aid, opportunities related to the capital campaign should be exploited. The subcommittee understands that projected contributions to undergraduate aid will be in the neighborhood of $20 million, not the $100 million necessary to alter drastically Penn’s ability to fund institutional grants from restricted sources. The group feels that it is necessary to develop further innovative mechanisms for financing an education at Penn. There is also more that can be done to help students come up with a portion of the aid package through increased job support both during the academic year and over the summer. These issues will be addressed in the following sections of this report.

In general, the University needs a more active program to encourage gifts for financial aid purposes. Such a program should attempt to overcome the objections that potential donors may have to reinforce the reasons current donors have for contributing. One way to do this may be to strengthen connections between financial aid donors and the students who benefit from their gifts. The University has recently improved its stewardship of these gifts; recipients are being encouraged to acknowledge thanks to donors personally. The subcommittee feels that increased faculty involvement in this area could also have a great impact. For example, having a faculty member and an aided student with whom he or she is working join a donor for lunch could greatly enhance the donor’s sense that he or she is having a concrete impact on the University.

The subcommittee has discussed at length the current division of labor in which the central administration is responsible for undergraduate aid and the administrations of the individual schools are responsible for graduate and professional aid. This arrangement is basically sound. Restructuring the current formulae according to which aid dollars are distributed to the undergraduate schools would benefit some schools at the expense of others. The subcommittee believes that such a restructuring would not generate significant dollars but would instead cause considerable unhappiness. The current process reflects the fact that, while students enroll in one of the four schools with undergraduate programs, they often take courses in the other schools. In light of this, it seems most equitable for the financial aid distribution across programs to reflect need irrespective of the school in which a student is registered.

Financing an Undergraduate Education. The subcommittee has spent a great deal of time discussing innovative ways of financing a Penn education, and has agreed that four points describe the environment within which any new policy must be formulated:

1. Penn’s scholarship aid is severely underfunded in the restricted accounts.
2. Today’s financial aid recipients are more economically sophisticated than in the past.
3. The major private education institutions will probably continue to raise tuition in order to maintain current rates of internal investment. This, however, will create increased pressure on the University’s ability to aid families.
4. As a result of the large amount of cash flowing through the institution, it may be desirable for Penn to take on more bank-like functions in support of student financial aid.

With some current programs, such as the Penn Plan, the University is already engaging in bank-like activities. Nationally, the Consortium on Financing Higher Education is thinking along these lines. The subcommittee has discussed in general terms how engaging in bank-like functions could address our current concerns and what may be the potential problems.

For example, it is thought that investors might deposit money with Penn if the University could guarantee a good rate of return and also use those funds to underwrite financial aid costs. This program would be particularly attractive if Penn could somehow make the investment one of saving for higher education. While we are cognizant of the various legal and political issues to be resolved, there are historical precedents for similar arrangements. Credit unions were originally established as a means for workers to invest money without paying fees to a for-profit intermediary. Savings & Loan Associations were created as a way of disintermediating the process of obtaining a mortgage. Without a financial intermediary, it is hoped that an appropriate instrument could provide a competitive rate of return to investors and at the same time support financial aid costs through underwriting institutional loans and grants.

Many subcommittee members question the feasibility of such arrangements. Is it possible to create products that are both attractive to potential investors and provide the desired surplus for funding a portion of undergraduate aid? Is there a market for these types of investments? What kind of guarantees could be provided in terms of rate of return or ability to meet tuition increases? The Consortium on Financing Higher Education is currently considering the feasibility of sponsoring limited bank-like functions. Most members of the subcommittee support working with the Consortium for now. However, there were strong arguments made concerning the advisability of Penn taking the lead in organizing a group of institutions to sponsor this approach rather than working with the Consortium.

While the subcommittee is unsure of the feasibility of these propositions, members generally felt the ideas had enough merit to warrant further study. The group thus endorses the following proposal:

It is the consensus of the Provost Subcommitte on Financial Aid that further evaluation of the proposal for Penn to become involved in bank-like activities is warranted. Further, we recommend that a working group be established in the summer of 1989 to identify advantages for Penn, to organize a market research effort, and to determine what extent the effort should be pursued by Penn independently or in conjunction with the Consortium on Financing Higher Education.

A closely related proposal is to encourage further the establishment of gift annuities as a way of giving to Penn. An annuity paying 7 to 8 percent annually can be competitive, and Penn can invest that money in student loans at about 12 percent—the current rate for Stafford loans.

A third idea is to develop a program to encourage families to participate further in the tuition prepayment program. The University is able to invest the unexpended portion of the prepayment, and the proceeds from this activity could be used to fund student aid.

ALMANAC SUPPLEMENT December 5, 1989
Other Financial Aid Issues

The subcommittee feels that there are additional steps that can be taken to enhance Penn's ability to fund its undergraduate aid budget while at the same time providing students with more ways to finance their education.

Four-Year Fixed Budget

Currently, the Penn Plan provides for the prepayment of four years' tuition and fees at the freshman rate to permit the stabilization of costs for families concerned with tuition increases. There is no provision for room and board in prepayment, and there is no means by which aided students can benefit from this concept. The four-year total budget concept could be marketed as a means by which the full cost of attendance for four years can be prepaid at the entry level to avoid incremental costs in tuition and room and board. The prepayment could be paid in full or financed by low-cost loans through the Penn Plan. Additionally, the feasibility of developing a method whereby the concept of prepayment could be extended to the aided population should be fully investigated.

The prepayment of tuition is particularly attractive during periods when tuition and room and board costs are increasing at a rapid rate. The financing of four years of education can be viewed as economically sound during these periods, particularly if the interest costs are tax deductible. Through some preliminary evaluation of the assets of aided families, it has been determined that there is some substantial home equity in their residences that could be used to provide security for loan obligations. Furthermore, under present law, home equity could be used to make interest on loan obligations tax deductible. It should be noted that the program of prepayment has been modeled as self-supporting, even when the rate of tuition increase is as much as 1 percent greater than the rate of earnings on the prepayment funds.

Assistance in Meeting the Student Contribution

The student contribution, that portion of the aid package for which the student is responsible, is based on anticipated summer earnings. It may be impossible for students who must attend class during the summer to meet their contribution. The subcommittee feels that the unique problems faced by this group of students may be of interest to potential donors and that efforts should be made to raise funds for this particular purpose.

Even students who are not attending school during the summer may have problems meeting the student contribution due to difficulty finding a job that can provide sufficient income. The subcommittee feels that some effort should be made to organize a network of alumni who can provide summer employment for aided students. The program would be most beneficial if students were working in their home towns since summer housing costs would then be minimal.

Employment During the Academic Year

The subcommittee believes that academic year employment opportunities for aided students are too constrained. The network of area employers interested in hiring students to work on a part-time basis should be expanded, and these jobs should provide higher wages than the current College Work Study program. For those students who stay in the Philadelphia area for the summer, these part-time jobs could become sources of summer employment.

Penn Student Agencies recently established a service that enables students to be employed as temporary workers in various University offices. The existence of this program should be made more widely known. In addition, current efforts to locate temporary work for students at off-campus sites should be explored and publicized. The subcommittee feels that this service has the potential to locate career-related temporary job opportunities for students as well as to address various financial aid issues.

Obtaining More Outside Grants

Increasing the amount of outside grants for which aided students qualify would decrease some of the pressure on students and on Penn's institutional aid budget. Strategies that would match potential students with appropriate funding sources should be vigorously pursued. The subcommittee supports having the Office of Student Financial Services investigate computer software that would facilitate this process.

In addition, the group urges the recruitment staff of the Admissions Office to take advantage of the fact that various labor unions and companies have scholarship benefits for their members and employees. It would be to the University's advantage to market itself in these areas in addition to more traditional settings.

Federal Legislative Developments

Congress is currently discussing ways to link eligibility for federal student aid to mandatory military or community service. President Hackney and the University have already gone on record as opposing this development. The subcommittee is also opposed to these proposals. If military or community service is made a prerequisite for federal aid, Penn will have to investigate ways of mitigating the policy's impact on our students dependent on such aid.

The Office of Student Financial Services

The offices that deal with student financial matters have just undergone major reorganization. During the tenure of this subcommittee, the services provided by Student Financial Aid, the Office of the Bursar, the Penn Plan Agency, and the Collections Department were integrated under one office. The group has been kept apprised of the status of this transition through regular reports by the Associate Vice President for Finance and the Director of Financial Aid.

From all reports, the transition has proceeded more smoothly than anyone could have expected. Undoubtedly, this was due to the central attention paid to the human element during this stressful period. Staff of all levels of the new Student Financial Services Center were involved with and consulted about implementing the reorganization. In addition, administrators at the various Schools were oriented to ensure that their staff were aware of any changes resulting from the new structure.

A major problem the Office faced was an inadequate telephone system. Because of the reorganization, several offices that each had heavy telephone demands are now using a single system. Individuals attempting to telephone the Office often had difficulty getting a connection. Appropriate technology to deal with the continuous demand on the telephone system was identified and is being acquired. Now the system is more accessible. As a result, the demands on the Office staff have dramatically increased and there is concern that the workload is increasing faster than the staff's capacity. Monitoring the demands on the Office and the Office's capacity will continue to be an ongoing project.

In general, the University seems well on its way to creating an integrated student and family financial services group. The subcommittee feels that the Office of Student Financial Services is well situated to deal with many of the proposals contained in this report.

As a final point, the Working Group would like to thank Dan Shapiro for the extremely competent way in which he has staffed its operations.

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 Morrission, University Life
William Schilling, Student Financial Aid
Paul Taubman, Arts and Sciences
Robert Zemsky, Education

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* There are four aid packages. The following packages were available for Class of 1993 incoming.

- Package 1 has a self-help component of $3,950. Qualifying students include those who are most academically competitive, socioeconomically disadvantaged students, underrepresented minorities, and those enrolled in the School of Nursing.

- Package 2 has a self-help component of $4,950. Qualifying students are residents of the Commonwealth of Pennsylvania not qualifying for Package 1.

- Package 3 has a self-help component of $5,150. Qualifying students from the academic top quarter of admits, are recruited athletes, or are residents of geographic diversity target regions who do not qualify for Packages 1 or 2.

- Aided students who do not qualify for any of the above packages receive Package 4, which has a self-help component of $6,050. Of course, students are awarded the best package for which they qualify.

**Ms. Harris, our student representative, was out of the country during the period when the final report was being written. She participated in the Working Group's activities throughout the academic year but did not review the final report.
Subcommittee on Advising / Retention

The Working Group on Advising and Retention sought to identify the factors that either impede or promote the realization of students' academic potential. The Working Group focused first on the retention problems of African-American and Hispanic students and then on the broader issues of advising and retention.

Background

The Working Group read reports on retention, advising, and minority concerns produced at Penn and elsewhere over the last ten years. To gather data on the current situation at Penn, we interviewed selected undergraduate deans and undergraduate chairs of departments; the Chair of the Faculty Senate; and representatives from Career Planning and Placement, the undergraduate advising offices, and the Office of College House Programs. We then conducted a mail survey of all African-American and Hispanic alumni, asking them about their experience at Penn. Out of 3,500 questionnaires sent, 275 were returned. Finally, we interviewed 40 students drawn from a random sample of African-American and Hispanic students that was blocked proportionately for race, gender, age, and academic achievement. (Because their retention rates are commensurate with those of whites, Asian students were not interviewed for this study.)

Retention as Academic Success

Measured simply by graduation rates, the success of Penn students has improved over the last few years. Retention studies at Penn indicate that the six-year graduation rate for all students has increased from about 81 percent in 1977 to about 88 percent for the entering class of 1982. Graduation rates for African-Americans have increased to about 65 percent over the same period. Although the numbers are so small that their stability is questionable, six-year Hispanic retention rates follow the same upward trend (roughly 58 percent in 1977 to roughly 78.5 percent in 1988). Retention rates for Asians have paralleled the overall rates since 1977.

While Penn should take pride in both its improvements during the last decade and in its achievement when compared to peer institutions, it should also be concerned that approximately 12 percent of its entering students do not graduate from Penn. Of even greater concern is that a disproportionate number of the students who leave are African-American or Hispanic.

Retention as a Function of Admissions Data

The Working Group reviewed the extensive literature on using traditional admissions criteria to predict retention. We also examined private studies by Penn and by peer institutions. The findings overwhelmingly indicate that statistical models for African-Americans and Hispanics alone, like those for all students, account for only a small and unimportant amount of the variation in four- to six-year retention rates. Admission criteria appear to have, at best, only a very modest effect on retention; and none of the variables—individually or in combination—is strong enough to account for differences in graduation rates or to suggest any need to change admissions criteria. Once students have reached a certain threshold of ability (traditionally defined), other variables that are more difficult to quantify—temperament, background, and environment—play a much greater role in enabling students to graduate. Since the students admitted to Penn are clearly well above the minimum threshold, the Working Group endorses the admissions strategies laid out in the Report of the Working Group on Admissions.

Retention as a Function of the Quality of Undergraduate Life

Based on our collective investigations, the Working Group finds that variations in retention rates are most readily explained by the organizational features of the University that are most immediate to the undergraduate experience. While the problem of African-American and Hispanic retention is in some ways special, it is largely a subset of the broader problem of how to enhance student success. Indeed, our investigation leads us to believe that the problems of student retention are most amenable to solution when redefined as problems of enhancing student development. Because the issues involved in such a redefinition are so numerous, the Working Group was divided into two subcommittees—one on the academic environment and one on the support environment. We will take up the findings and recommendations of each subcommittee in turn.

Qualities of Academic Life

Because it is psychologically very large, many students find Penn to be a daunting and impersonal place with an overwhelming array of academic, extracurricular, and social options. In part, we believe that this situation is inherent in the framework of a major research university. In part, however, it also reflects a complex, relatively disorganized system of advising and support services that to some extent differ from college to college and to a large extent depend on student-initiated contact. These factors all contribute to what President Hackney has called the "psychological size" of Penn and probably affect all students negatively to some degree. It is our conviction that students must have access to a structured, highly coordinated system of academic and social support.

African-American and Hispanic students in particular require special attention in some areas because of issues that inevitably arise from living and learning alongside a much larger, dominant group. Nevertheless, most of what we identified as central to their success is equally central to improving the achievement of all students at Penn.

A Large, Impersonal Campus. Respondents to our interviews and questionnaires described Penn's atmosphere as an impediment to their academic success. They often lamented that they had no one to whom they could turn when they needed help, that University representatives were uncaring or unfriendly, and that it was difficult to become known as an individual. While most had had positive as well as negative experiences, they generally found an overall lack of warmth.

A Negative Classroom Environment. To the question of what interfered with their academic success, the largest number of alumni responses recounted problems with inapproachable professors who were unwilling to spend time with students, and ineffective TAs, some of whom had great difficulty communicating in English. Many noted that it was very difficult to have outside contact with professors or to form real relationships with fellow students. Most students, especially underclassmen, find it difficult to form a lasting academic relationship with a professor. Those lucky enough to be in seminars are too often not taught by

Recommendations on Qualities of Academic Life

Improving Undergraduate Instruction. The Working Group knows there are many effective and caring teachers on campus. We applaud those initiatives already undertaken to improve the classroom experience at Penn. We believe, however, that more should be done. In particular, we recommend that the Provost take the following steps:

1. Create the post of Vice Provost for Undergraduate Instruction (VPUI). We currently have Vice Provosts for Research, for Computing, and for University Life. We believe someone should be charged directly with the responsibility for improving instruction. The VPUI could be impeded by the prerogatives of the school faculties; but this is a problem that faces other vice provosts as well. Therefore, the VPUI should have at his or her disposal centrally funded resources with which to create new initiatives, to foster experiments, to help professors improve their teaching, and to provide regular and ongoing TA training. In addition, once appointed, the VPUI should be responsible for implementing the rest of the instructional proposals in this report.

2. Create a Center for Teaching and Learning. This center, under the VPUI and centrally funded, should have the personnel and re-
3. Develop departmental incentives for successful teaching and advising. Departments need to understand that it is in their best interests to foster good teaching. If the distribution of merit pay, funds for senior research projects, and even future positions were partially contingent on improving instruction, the University will begin to create a new ethos that values high-quality teaching, especially in those departments in which it is not currently valued.

4. Reduce class size, especially in freshman courses. Given the economy of large classes, this will be difficult to achieve. It may require a central commitment of funds. It will require some shift of focus in some departments from graduates to undergraduates. In cases where it is not possible, the situation could be helped by the addition and inventive use of more and better-trained TAs.

Creating Community. One of the most important aspects of residential living is the potential for creating communities of students. The University must find ways to engage the various campus communities and to ensure that programming is focused enough to meet their particular interests and needs. Faculty and staff members in residences should function, in part, as resource providers and policy administrators in this creative process. In order to help create a greater sense of community through residential living, we recommend that the Vice Provost for University Life (VPUL) take steps to implement and enhance:

1. The planning of activities and programs that are consistent with the backgrounds and interests of students. This information may be obtained from students and admissions data.
2. The separation of the facilities-management role of residential staff from their role as advisor and counselor.
3. The increased involvement of students in the actual programming of residential activities.
4. The development of events that foster greater interaction among residents. This might include intramural and intra-residential team competitions.
5. The increased involvement by undergraduate professors in the activities of residents who are taking their courses or who are interested in their major field.
6. The development of resume-writing workshops that anticipate the task of securing summer jobs and long-term employment.
7. The clustering of residents by major and interests when possible.
8. The sponsorship of events throughout the year by various building wings.
9. The creation of a clear definition of the authority and responsibilities of faculty members (besides House Masters) who live in the residences. These role expectations should be made known to both student and faculty residents.
10. An increase in the number of residence-based freshman seminars.

Supporting Academic Performance. Student-faculty relations are directly and inextricably related to student academic performance. We assume that all students admitted to the University have the capacity to achieve proficiency in their selected courses if they are provided with quality teaching and support. It is up to faculty and administrators to assure that they get both.

Large introductory courses do not always provide an environment in which to determine a student's academic needs. Additional methods must be implemented to make early assessments of a student's progress, with a mechanism for referring students to the support services appropriate to their needs. The Working Group recommends that the Provost and the Undergraduate Council of Deans:

Institute an "early warning system" in all introductory courses. This system would be consistent with school and department student-advising policies and procedures. For the students, it would both convey faculty concern and signal the importance of academic support services.

Building Collegiality. At a large university successful student-faculty relations are essential as a means of creating small academic communities within the institution and of fostering student retention. Unfortunately, there are many practical reasons—including domestic obligations, lengthy commutes to campus, and preoccupations with research—why Penn faculty are not more involved with students outside the classroom. Given these restraints, the University should do what it can to foster a genial and collegial atmosphere in which faculty take the initiative to interact with the student members of the Penn community. To this end, we recommend that the Provost and deans:

1. Develop a set of faculty incentives to increase faculty-student interaction.
2. Develop a system for monitoring and evaluating the implementation of this plan.

In addition, we recommend that the President expand his efforts to foster faculty-student interaction by:

1. Establishing a campus-wide weekly dinner plan, whereby a different faculty member would meet and eat with 15-20 students each week in the residence hall dining facilities to discuss topics of interest.
2. Expand and publicize University-sponsored provisions for faculty members to take students to lunch. This may sound unimportant, but for students to be invited to lunch by a faculty member can make a major difference in the students' perceptions of the friendliness of the institution.

Taking Advantage of Diversity

The University enjoys a richly diverse student, faculty, and staff population. The Working Group believes, however, that a greater appreciation of this diversity needs to be fostered in the members of the Penn community. Too often, difference is still perceived as an obstacle to communication and interaction. It is ironic that, after working so hard to create a diverse community, the University does so little to ensure that that diversity becomes an integral part of the educational experience.

Recommendations on Taking Advantage of Diversity

The Working Group applauds those efforts already under way to encourage an appreciation of the diversity at Penn. We would like to see that appreciation increasingly integrated into the academic life of the University. We therefore recommend that the Provost take steps to:

1. Strengthen the academic component of college houses and expand the college-house system so that students from all backgrounds have the opportunity to live and learn together. The house system can shrink the psychological size of the University by reducing isolation and fostering community support. We are convinced that students who take courses together and live together will find it much easier to develop the kinds of mutually supportive study groups and friendships that promote both retention and academic success as well as personal development.
2. Create a "Diversity House" as an alternative within the College House system. Students who choose Diversity House would come together to study diversity while living amid a diverse population.
3. Create an experimental "Core Curriculum House," through which diverse students and a small group of faculty can elect to study the same curriculum together.
4. Promote collaborative learning projects across the curriculum. In particular, it is important to structure such projects in ways that allow racially integrated work-groups to emerge.
5. Require undergraduates to take courses in non-western studies. We are living in an increasingly pluralistic world. Helping all students to learn that our lives and culture are not shaped solely by our society. Similar efforts should be made to recognize Hispanics, the largest and fastest-growing subgroup in the country.

6. Establish a Hispanic Studies Program. The fact that the University currently has a Women's Studies Program and an Afro-American Studies Program represents a good start in recognizing the importance of scholarly research and teaching about key groups in our society. Similar efforts should be made to recognize Hispanics, the largest and fastest-growing subgroup in the country.
Academic Issues Particular to African-Americans and Hispanics

The Classroom Environment. Perhaps the most serious issue raised by our survey and interview respondents is the perception that some professors, administrators, and students have low expectations of African-Americans and Hispanics because of racial stereotypes or because they are assumed to be "special admits" filling "a quota." The experience of one African-American female freshman bears quoting. She describes getting a 'C' on her first calculus test: "When I went to my professor to get help with my grade, he said, 'C was a good grade for a black student.'" I find that very insulting and won't accept any "prospective grade index." I got a good tutor and 'A' in the course.

Alumni and students also reported cases of classroom insensitivity. Often this was a fault of omission. Alumni felt that University policy did little to encourage the majority of students and faculty to learn about non-white history and culture. Indeed, the largest number of suggestions for improving the success of African-American and Hispanic students centered on providing white professors, staff, and students with culturally relevant courses and workshops.

Racism and Racial Isolation on Campus. A number of our respondents complained about specific racist incidents, often involving white fraternities. Several also commented that there seemed to be a general tone of racism in the Penn community and a general permissiveness on the part of the administration when dealing with it.

African-American and Hispanics identified racial separation as another major impediment to their academic success at Penn. Distinct from overt racism, isolation appears to have several different sources. There is a cultural tendency for people to seek out those who are similar to themselves. This is perpetuated by the fact that there are few natural settings for white and non-white students to meet and socialize.

We believe that de facto racial segregation on campus effectively inhibits all students, faculty, and staff from making the most of the diversity of the student body and the campus community at large. Of particular harm to African-Americans and Hispanic students, however, is the fact that racial segregation often makes it difficult for these students to find study groups in many classes.

Under-Representation in the Penn Community. Our respondents also mentioned the small African-American and Hispanic presence at Penn as an impediment to their success at the University. A large number of them identified it as a situation that Penn could readily improve to promote success among African-American and Hispanic students. An increased minority presence would provide important role models, help reduce isolation, help majority group members appreciate diversity within groups, and allow minority students to be themselves instead of being asked to represent or, worse, being assumed to represent their minority group. Indeed, one of their chief complaints about the classroom environment arose from the difficult position in which professors and peers put them when race became a topic for discussion.

Problems with Financial Aid. Difficulties with financial aid were identified as having three aspects. First, people simply felt they had not received enough aid. Second, there was a perception that aid was unfairly distributed. (It is not clear from the responses upon what this view is based.) Third, there was a perception that the Office of Financial Aid is disorganized, unresponsive, and often insensitive to student needs.

Most African-American and Hispanic students (and indeed most Penn students) would not be here without substantial amounts of financial aid. Missing or misplaced forms, unclear communication, and delays in processing paperwork can create great anxiety. Our interview respondents described having to wait for money that they depended upon for food, rent, and books. They also complained of long delays in getting an appointment, sometimes having to reveal embarrassing personal information, and change in the level of support, and counselors' obliviousness to the fact that many African-American and Hispanic families count on their children's summer earnings as a source of income. Other sources suggested that these problems are experienced by many students using the Financial Aid Office. Moreover, the problems do not seem to have been alleviated by the recent reorganization of the Office.

The Importance of Cultural Background. Cultural backgrounds can be central in determining educational experience at Penn. Both African-American and Hispanic students told us that, prior to coming to Penn, they were taught to be independent, to study individually, and to avoid working with peers. Students told us that they had learned that it was a matter of pride not to seek outside help when they experienced difficulties, and that if they went to a teacher, it would be seen by peers as inappropriate. Both African-American and Hispanic students also mentioned the relative success of the Pre-Freshman Program and peer mentoring in changing these attitudes.

African-American and Hispanic students also expressed concern about the competitiveness at Penn. Some saw it simply as a negative aspect that increased the distance between students. Others felt unprepared to engage in it. First-generation college students linked their freshman difficulties to their poor preparation and the lack of college experience in the family. Many African-American and Hispanic students felt the first year in their families often in their extended families—to go to college. Matriculation at an elite institution is itself viewed as a great achievement. We hypothesize that first-generation students may also sense that they have not learned to play the academic game—the implicit rules and expectations of being a student—to the same degree as students from families with long histories of advanced education.

Recommendations on Meeting the Special Needs

The University has already made a serious commitment to enhancing African-American and Hispanic presence on campus. The latest figures show that Penn has surpassed its peers in the number of African-American faculty we have and is equal to them in the number of African-American students. We recommend that the President and Provost take the following steps to ensure that Penn not only maintains its position with regard to recruiting faculty and students of color but that it improves during the coming decade:

1. Increase financial aid for African-American and Hispanic students. We believe that it will become increasingly difficult to recruit students of color without major increases in aid. During the forthcoming campaign, the University should take as one of its major goals the raising of money to ensure that Penn can continue to attract excellent African-American and Hispanic students in increasing numbers.

2. Create a Distinguished Student Scholars Program. One way for the University to increase the pool of non-white PhD-holders in academia is to identify superb African-American and Hispanic undergraduates very early and to encourage them to enter academe.

3. Develop departmental incentives for recruiting African-American and Hispanic faculty. Given current pools within any academic sub-field, the likelihood of an African-American or Hispanic candidate emerging as the top prospect in any given search is small. We propose that the University hold back a certain number of tenure lines or, better, create a new set of tenure lines. It should then allocate these to departments that, in open competition, come up with the strongest African-American or Hispanic candidates.

4. Develop new departmental incentives for promoting African-American and Hispanic scholars. Such scholars often suffer from the same marginalization described by our alumni and students. Furthermore, because they are in great demand as mentors to students and as "representatives" on various committees, they struggle for tenure under even greater pressure than white junior faculty. Under these circumstances, it is not enough simply to hire excellent people. Departments need to develop them actively. Departments that do this successfully should be rewarded with extra tenure lines, more discretionary money, and the like.

5.Create a Distinguished Senior Fellows Program. The Senior Fellows program would recruit retirees whose outstanding accomplishments have distinguished them in some academic, professional, or artistic field. They would be brought to Penn for periods ranging from...
from one to three years to fill vital roles on the campus. Some could teach; others might become heads of college houses. Still others might take up residence in the houses, run informal seminars, and provide advice and mentoring.

6. Create a Distinguished Visitors Program. Under the “Program to Enhance Minority Permanence” the University already operates a program to bring outstanding African-American and Hispanic scholars to campus as visiting professors. The program should be expanded to supplement that group with a number of distinguished people from various walks of life who would spend a period of one or two weeks on campus, much like the current Pappas Fellows. The goal would be to expose all members of the community to the variety and richness of non-white achievement.

Supportive Services for Undergraduates

Academic advising, personal growth, and career development are all factors that encompass and limit both the perceived and the real academic development of undergraduates. Although they were not specific about nature of the problem, alumni respondents frequently cited inadequate counseling as an impediment to their success. Perhaps this is not surprising; it is difficult to quantify what one feels was a lack. Clearly, however, graduates wanted more guidance than they had been able to find. Current students made this somewhat clearer. Many students had seen their advisor only once or twice. Sometimes this was because they did not find the advisor helpful or prepared. Sometimes it stemmed from an assumption that advisors would contact them. Some students encountered advisors who made negative assumptions about the students’ capabilities; the students understandably refused to go back to them. Finally, some students, out of pride, simply expressed a reluctance to seek help.

At an institution that emphasizes research and publication, professors too often do not have the inclination to advise students. This is especially so for students who do not demonstrate superior academic performance and thus are usually not involved in faculty research projects. These aspects of the academic experience are often unavailable to African-American and Hispanic students, and certainly unavailable to those with low-to-medium grade point averages. Moreover, there are too few African-American and Hispanic faculty available at Penn to guide the personal growth and career-development of African-American and Hispanic students.

The Needs of Freshmen. The primary areas of freshman orientation include improving students’ decision-making skills in selecting courses, increasing students’ abilities to use support services, fostering the success of student support groups, and increasing the effectiveness of families to assist their children in the first year of university study.

From our discussions with students, faculty, and administrators, it is clear that special supports are needed for students throughout the freshman year. Most of the freshman programs now in use at Penn focus on the pre-freshman period and on the first few months of freshman year. Such a schedule is not always effective because freshmen don’t always absorb the advice and information imparted to them. Often this is because the information is given to them too early to make much practical sense.

Attrition. The University knows little about the actual reasons students leave. Students usually do not make it a point to tell an administrator, advisor, or faculty member why they are leaving Penn before graduation. They simply disappear; and the University is none the wiser about what it might have done to retain them. Similarly, there are undoubtedly cases in which students do confide in someone; but then the information remains in confidence.

Recommendations on Supportive Services

Academic Advising and Supportive Services. The Vice Provost for University Life, working with the undergraduate deans, should establish an effective Supportive Services network as an extension of the Advising System with the central purpose of monitoring the academic progress and adjustment of all undergraduates and especially those from racial minority groups. The Supportive Services staff would have the following responsibilities:

1. The development of a system to monitor—formally and informally—the academic progress of at-risk matriculants at least three times each semester. Suggested forums for implementing this system are structured interviews with students either individually or in small groups, special workshops, or informal social gatherings.

2. The provision of administration and direction for the Pre-Freshman Program (PFP). These responsibilities would include designing the curriculum in concert with faculty, as well as designing and implementing a specially tailored orientation program for racial minority PFP students entering the University. The orientation program should include instruction on academic expectations and formal rules and procedures, as well as on such “survival skills” as knowing how to interact responsibly and successfully with professors and staff.

3. The incorporation of student advocacy procedures in cases in which students in crisis need advice and counsel regarding academic problems. Such procedures should include strategies for approaching professors relative to student concerns. Support service-provider (including academic advisors) should be sensitive in the handling of student referrals and have the requisite skills to prepare case profiles on the pertinent issues. Also central to the advocacy role, those handling a student’s case should be able to separate a student’s academic problems from non-academic problems and to respond appropriately to all problems. This could be accomplished by instituting a coordinated approach in which a student’s various support needs could be diagnosed all at once. This would allow multiple referrals to be made quickly. Such an approach would be superior to the too frequent syndrome of serial referrals made over an extended period of time.

Personal Growth and Career Development. The University needs to formally recognize individual students’ interests in personal and career development and to assist students in developing interpersonal skills and confidence through faculty-student interaction early in their academic career at Penn. African-Americans and Hispanics in the particular would benefit from a system that develops role models and encourages the involvement of faculty members in student efforts. The Working Group recommends that the VPUL, working with the undergraduate deans:

1. Develop a program of faculty mentoring for students who might otherwise be overlooked.

2. Establish an Independent Study/Work Study program for African-American and Hispanic undergraduates. This program would be designed to enhance career development opportunities for African-American and Hispanic students who are interested in professional fields. Students would be assigned to undergraduate and graduate faculty and engaged in non-credit or credit-bearing projects, research, work-study jobs, and related experiences.

3. Expand and systematize opportunities for students, and especially African-American and Hispanic students, to do summer internship work. African-American and Hispanic students often need to work during the summer for both career-related experience and personal development and for compensation. Students who participate in a summer internship might parlay their efforts into advance work for an independent study course in the fall semester.

4. Engage corporations, professional alumni, and faculty in career-planning workshops, seminars, and pertinent programs on a regular basis. In particular, alumni who volunteer to be mentors when completing the alumni survey should be contacted in the fall so as not to lose their interest or enthusiasm.

5. Design career-planning activities involving University agencies, such as Career Planning and Placement and the Counseling Center.
Freshman Support Groups. In order to help integrate students into the Penn community, the Admissions Office should relay information related to the interests of incoming students to:

1. Faculty in residences and the Assistant Deans for Residence to assist them in developing interest-based support groups for their first-year students.

2. The Office of Student Life Activities and Programs so that it can inform the relevant student organizations and programs for immediate follow-up and pre-arrival mailings to announce open houses or similar orientation activities.

Communication with Families. The University needs to take a more active role in facilitating family support. In order to address the issue, we recommend that the VPUL develop:

1. A plan for helping families support their children at Penn. Such a program might include the selection and distribution of articles and references to families. These materials should cover such topics as handling separation, calls from "stressed-out" children, and problems related to unrealistic expectations.

2. A vehicle for communicating regularly with parents—at least annually—to provide them with the academic calendar and information on University policies and relevant federal laws, such as those regarding the right to privacy.

Attrition. In order to develop a greater understanding of the dynamics of attrition, we recommend that the VPUL and the Vice President for Finance:

1. Require that all students who are planning to leave Penn undergo a carefully developed, semi-structured interview.

2. Require all entering students to post a $100 bond, refundable either after the exit interview or upon graduation, in order to ensure that students come for such an interview.

3. Designate faculty, staff, and administrators in key segments of the University to be interviewers. Those people should be chosen so that what they hear becomes part of the knowledge used in helping other students to avoid dropping out.

The Advising System

Sources of Advising. Advising at Penn comes from four sources—faculty, professional advising, support services, and peer advising. The quality of the undergraduate educational experience at Penn is bound in some measure to the effectiveness of the overall advising system. We believe that faculty-student interaction remains the ideal forum by which academic wisdom is offered to our undergraduates. Advising is certainly not the only way to foster these interactions, but it is an obvious means of building them into the structure of the Penn experience.

The University must recognize the importance of faculty advising, and support efforts to increase faculty advising so that each incoming student can be assigned a faculty advisor. Professional advisors should lend support to the faculty advising program and work intensively with "undecided" students, students pursuing special program options, and students in need of special academic support.

A collective effort should be made to establish the best possible relationship between faculty-student interaction and professional advising. Most important, advising and support systems must be more active in their outreach. Active outreach, by its very nature, engages students in a proactive and stimulating way. Experience has shown that when one reaches out to students, they in turn feel that they can become more active participants in the use of available resources.

Peer advisors can also play an important part in orienting new students to the University by providing experiential and anecdotal insights. Like academic support advising, however, peer advising is dependent upon the quality of faculty and professional advising. If support advising and peer advising are viewed as the primary services for meeting undergraduate needs, there will be a deterioration in student confidence and trust. All four levels of advising must remain coordinated and in proper balance; and all individuals involved in advising should be trained and familiar with the University's support services so that they can make informed referrals for students.

Policies and Procedures Across the University. Despite Penn's "One University" slogan, many undergraduates encounter problems negotiat-
entry-level positions with the option of full salary or salary-less expenses with housing in a residence. As recent alumni, preceptors would be close enough to the academic experience to relate to students and to offer first-hand suggestions about professors, academic, and even social activities. Further, preceptors would be trained so that they can provide solid and comprehensive advising as well as referrals for academic and non-academic problems. This approach will enable the senior advisors to concentrate on the academic needs of the students and will support the retention of students through follow-up with academic and personal support agencies.

**Peer Advising.** Students should be as informed as possible about the options they have at Penn. It would be helpful to compile academic information generated by students to complement the formal written information that freshmen receive from their home school on rules and regulations concerning key events such as drop/add periods, and registration. Finally, an effective peer-advising program in the College would alleviate some of the academic advising load of professional advisors. The College’s peer-advising operations should be expanded and restructured to serve students better. We recommend that the VPUL and undergraduate deans:

1. Ensure that student handbooks and course guides are always developed with input from students.
2. Draw on the experience of the Wharton Peer Advising Program in developing the peer-advising program in the College.
3. Develop peer-advising systems in the Schools of Nursing and Engineering, again taking the Wharton Peer Advising Program as a model.

**A Framework for Implementation**

We believe it is proper for the Provost to establish a standing Committee on Advising and Student Development. Together with this Committee, the Provost should develop a strategy to implement our recommendations to enhance the academic and advising and support environments of undergraduates at Penn. We recommend that the action plan devised by the Provost’s Committee include the specification of functional and administrative links among the Provost, the Vice Provost, and the undergraduate schools.

The plan should elaborate upon each set of recommendations in this report and determine the appropriate vehicle for implementation. It should also estimate and provide for the associated costs. We understand that a number of these recommendations will demand considerable financial and human resources. The University could find no better way to concretize its long-standing goals than by making a commitment to securing these resources.

**Peter Kuriloff, Education, Chair**
**Michael Austin, Social Work**
**Houston Baker, Arts and Sciences**
**Gail Daumit**, Wharton, '91
**Diane Frey, College Advising Office**
**Allen Green, House Master, DuBois**
**Harold Haskins, Student Academic Support Services**
**James Laing, Wharton**
**Melissa Moody**, College '89
**Tracy Miller**, College '89
**Jorge Santiago-Aviles, Engineering**

* We would like to express our thanks to Joan Paye, who served as secretary to the Working Group. We deeply appreciate the help of Tigray Glickman, graduate student in Psychology in Education, who provided able assistance throughout the course of our deliberations, and of Julie Roberts, graduate student in Linguistics, who analyzed the alumni surveys. Finally, we are especially grateful to Frank Hoffman, graduate student in English, who did a magnificent job of turning four long and overlapping subcommittee reports into one coherent whole. If any rough spots remain, the fault lies with ourselves and not with him.

**Our student representatives graduated from the University last spring. They participated in all of the Working Group’s activities, including the interviews, but have not reviewed the final version of this report.**
Ph.D. Education

Overview of the Committee’s Activities

In September, 1988, the Planning Committee on Ph.D. Education was appointed by Provost Aiken and asked to review the current state of Ph.D. education at the University, articulate a vision for its future, and recommend specific actions the University community might take to move toward that vision. To develop a broader view of the state of Ph.D. education at Penn, the committee met with representatives from each of the Ph.D. granting schools of the University as well as individual Ph.D. students, selected faculty, and various members of the central administration concerned with doctoral education. This report summarizes the committee’s observations and presents its final conclusions and recommendations.

A Vision of Ph.D. Education at Penn

Eight schools at Penn have doctoral programs. The numbers of Ph.D.’s awarded by each from AY 83-84 until the present are summarized in Table 1. Though relatively few in number compared to the undergraduate population, doctoral students are critically important in sustaining Penn’s role both as a center for advanced scholarship and research and a premiere undergraduate institution. Excellent research and fine doctoral students attract outstanding faculty, who, in turn, attract the most creative students and strengthen both the reputation and the caliber of instruction of the University.

Table 1: Ph.D. Degrees Awarded by Academic Year

<table>
<thead>
<tr>
<th>School</th>
<th>83-84</th>
<th>84-85</th>
<th>85-86</th>
<th>86-87</th>
<th>87-88</th>
<th>88-89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annenberg</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Biomedical</td>
<td>44</td>
<td>41</td>
<td>35</td>
<td>47</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>Education</td>
<td>28</td>
<td>41</td>
<td>45</td>
<td>49</td>
<td>44</td>
<td>39</td>
</tr>
<tr>
<td>Engineering</td>
<td>35</td>
<td>39</td>
<td>35</td>
<td>46</td>
<td>52</td>
<td>50</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>21</td>
<td>16</td>
<td>12</td>
<td>17</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Nursing</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>S.A.S.</td>
<td>139</td>
<td>152</td>
<td>174</td>
<td>170</td>
<td>153</td>
<td>192</td>
</tr>
<tr>
<td>Wharton</td>
<td>33</td>
<td>36</td>
<td>28</td>
<td>37</td>
<td>35</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>302</strong></td>
<td><strong>332</strong></td>
<td><strong>340</strong></td>
<td><strong>374</strong></td>
<td><strong>337</strong></td>
<td><strong>406</strong></td>
</tr>
</tbody>
</table>

For Penn to sustain and build upon its stature in American education, it must both have and be known to have truly outstanding Ph.D. programs. These programs should attract and matriculate excellent Ph.D. candidates, students who are not only distinguished intellectually but also possess those qualities of maturity, judgment, commitment, and tolerance which transform ability into leadership. Penn’s Ph.D. programs should also strive to attract promising applicants from underrepresented groups such as women and minorities to hasten the time when there truly will be equal opportunity and achievement for all in American education.

A doctoral student is education at its most personal. It is the process by which the values and techniques of scholarship are passed from one generation to the next—through the close interaction between a doctoral student and one or two faculty mentors. Outstanding Ph.D. programs begin with excellent faculty who are committed to doctoral education and doctoral students. They also require good library, computational, and research facilities as well as competitive financial support for student stipends and tuition costs. All of these factors are critical in wooing the very best students to a graduate program. However, the committee believes that the truly essential requirement for enhancing the quality and international recognition of Penn as a premiere institution for doctoral education, beyond that of fundamental faculty excellence, is faculty commitment. The faculty in each of Penn’s graduate groups must be actively involved in recruiting Ph.D. students and in providing outstanding educational opportunities for students enrolled in their programs.

Faculty commitment to Ph.D. education must be backed by organizational support. Deans must lead their faculties in maintaining and improving the quality of the graduate groups reporting to them. Deans must hold graduate group chairs responsible for the quality of the programs they lead. The Provost must work with each of 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 doctoral education in their schools.

Ph.D. education is and will always be a cottage industry in which each graduate program has a great deal of autonomy. However, while the organizational details of Ph.D. programs will inevitably vary across the university, the commitment to quality must not. Even with the best faculty and facilities, excellence does not just happen. It requires work. The quality of Ph.D. education must be understood to be an issue of major institutional value and importance. The central administration must articulate the importance of Ph.D. education and provide support for its special needs; the faculty must be committed to it and accountable for its quality; and deans must lead the graduate groups for which they are responsible in developing excellence in Ph.D. education.

Ph.D. Education at Penn Today

Observations from Discussions with Faculty

Several major issues emerged from the committee’s discussions with faculty and graduate deans:

**Variations in Program Quality.** 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, not all Ph.D. programs at the University are functioning as they should. Many 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 change.

**The Central Role of Deans and Schools.** The committee has observed that the quality of Ph.D. programs within a school is strongly influenced by the priority given to doctoral education by the dean. Schools in which deans are actively involved in 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 appears to be neglected by the dean. In schools in which tuition revenues from Ph.D. students are critical to the financial well-being of the school, there is clearly a risk that admissions standards may be compromised in the interest of admitting enough students to balance the budget. While this may not be surprising, it certainly is not desirable.

**Penn’s Lack of Visibility in Doctoral Education.** Penn’s Ph.D. programs suffer from a lack of visibility both outside and inside the university. Within some schools, Ph.D. programs are fragmented and lack organized influence on choices made in the allocation of funds and resources. There is the perception among many that the central administration is principally focused on developing undergraduate education and not nearly so concerned about doctoral studies. Externally, the university is not nearly so well known for Ph.D. education as it should be. Both situations can be remedied, but it will take an organized and continued effort over 5-10 years.

**Unequal Faculty Incentives.** Several faculty discussed the issue of incentives for faculty to participate in doctoral education. To some faculty, incentives are lacking; to others, academic research and scholarly work would be all but impossible without doctoral students. The differences between the attitudes of the groups stem from the diverse roles doctoral students play in the intellectual life in the various schools of the University.

For example, in the humanities the faculty-student relationship is often that of a traditional mentor-student interaction in which each participant engages in his own scholarly pursuits independently. Co-authorship of scholarly articles is unusual. From the viewpoint of a faculty member in the humanities, doctoral students can be both a source of intellectual stimulation as well as a distraction. The balance between stimulation and distraction, and the extent to which a student develops into an independent scholar, obviously is influenced by both the attitude of the faculty member and the quality of the student.

In contrast, in the sciences and engineering, students and faculty are co-participants in research and scholarship, and the relationship is symbiotic. The need to raise research funds makes it all but impossible for a faculty member to function as a lone scholar. Co-authorship of scholarly articles is the norm; single authorship is rather uncommon. Students begin their studies as participants in a faculty member’s
research program and, if all goes well, develop into independent researchers themselves as their work progresses. The degree to which a student develops into an independent researcher depends, again, on the attitude of the faculty member and the quality of the student.

A common complaint of faculty in engineering and science is that the 'business' of research, the raising of research funds sufficient to maintain a world-class research program, has become so consuming in recent years that very little time or energy is left for thinking and creativity. Regrettably, this situation exists to some extent at major universities throughout the U.S., and to a unique degree at Penn. Simply put, money requires students and students require money; achieving any level of international prominence as a scholar in engineering or science requires lots of each.

Finally, in programs in which a professional master's degree is the goal of most graduate students, doctoral students may be viewed by the faculty as intellectually stimulating but of low priority. These different viewpoints make it clear that, while outstanding Ph.D. programs may be essential to Penn as a leading university, the importance of Ph.D. students to the individual faculty members making up the graduate groups of the university and the incentives for seriously serving their educational needs vary considerably. Ph.D. education will not be outstanding nor perceived to be outstanding unless faculty in every doctoral program work to make it so. Faculty commitment to quality Ph.D. education requires that it be consistently recognized and acknowledged in the reward structure of the University.

Observations from Discussions with Doctoral Students

The committee met with a number of doctoral students to discuss their perceptions of Ph.D. education at Penn. The students were chosen to be broadly representative of the University's doctoral programs as well as experienced with Penn, thoughtful, and articulate. They provided the following view of Ph.D. education at the University.

Weak Institutional Reputation. Students commented that Penn is not generally known to be as strong an institution in Ph.D. education as, in fact, it is. This situation appears to be particularly true in the humanities, the sciences, and engineering. However, when prospective students actually visit Penn, they find it an impressive place that competes strongly with its peer institutions. The graduate students emphasized the importance of active programs of student recruiting which are carefully organized, staffed, and sustained.

Financial Support. As would be expected, graduate students are concerned about financial support, particularly its adequacy, fairness of distribution, and continuity. The comment was made that some TA workloads are excessive and the training, support, and supervision of TA's inadequate. Some students expressed concern and frustration with the university financial and its perceived inefficiency and indifference to student problems. Many students are concerned about the cost of health insurance required by the university and would like to see it subsumed into their fellowship support. Students also expressed concern that the current insurance plan has no provision for dental coverage.

Faculty Commitment. Regarding issues of faculty priorities and program quality, many of the students' comments related to the commitment of graduate group faculty to Ph.D. education and to the educational compact between students and faculty. The rules, requirements, mileposts, and standards for earning a Ph.D. in a particular graduate group are not always clearly articulated, well understood, and fairly applied. They urged that faculty who choose to participate in Ph.D. education should commit the time and effort necessary to do it well, and felt that, while many faculty meet these standards, some do not. In some groups they perceived inconsistencies in grading, length of stay requirements, and general academic policies. They felt that academic advising is not always of high quality, that faculty too often do not appear to truly interest students' progress and development, and that faculty are not as helpful as they might be in the challenges of job-hunting and professional placement. All were eager for rules that are clearly articulated and fairly applied, for stronger leadership by graduate group chairs who are mindful of students' concerns, and for simple caring on the part of the faculty about their progress and their lives.

Intellectual and Social Isolation. Intellectual and social isolation were problems mentioned by several graduate students. Graduate education almost inevitably leads to greater social and intellectual isolation than undergraduate education, and many students have had the experience of feeling cut off from campus life, their colleagues, and faculty. International students are especially susceptible to the problem, particularly during holidays when it seems as if everyone else goes home, but they cannot. The students the committee interviewed were eager for graduate groups to organize regular coffee hours, seminars, internal student government, and appropriate faculty/student social affairs to help alleviate the problems of isolation and enrich the educational experience.

Campus Life. Students raised a number of issues concerning general campus life. Some were concerned about inadequate office and laboratory facilities. Others noted that many facilities such as libraries, recreational facilities, Houston Hall, etc., base their hours and vacation schedules on undergraduate needs, and thus do not always serve Penn's large graduate population effectively.

Security. One of the most important issues raised by the students concerned campus security. It is clear that security and safety are emerging as major issues in the lives of many graduate students and will inevitably grow in importance in graduate student recruiting.

Conclusions and Recommendations

General Overview

Penn must be known as an institution that cares about and is committed to excellence in doctoral education. Doctoral students may be relatively few in number compared to undergraduates and professional students, but their long-term impact on the scholarly reputation of the university is high. Quite a few of the faculty with whom the committee spoke felt that over the past decade the senior administrators of the University have focused principally on developing undergraduate education and been far less concerned with doctoral programs. This perception does not help in developing outstanding doctoral programs at Penn.

Graduate Group Structure and Organization

The committee endorses Penn's rather unusual graduate group structure. Organizing doctoral education around graduate groups has many advantages: it encourages interdisciplinary and interdepartmental study of complex problems and non-traditional topics; it facilitates adjustment to new scholarly developments and the growth of new fields; it is a system that has the potential to be considerably more flexible and open to change than programs constrained by departmental boundaries; it fosters cross-school scholarly interaction among both faculty and students; and it makes it easier to create, recombine, and eliminate programs of graduate study in response to changing opportunities and needs.

However, the organizational flexibility of the graduate group structure risks blurred lines of accountability. Graduate groups can become lost in the system and effectively held accountable by no one. In addition, clear rules defining the responsibilities and expectations for faculty participation are lacking in many graduate groups, and graduate group chairs often fail to have the support and authority needed to lead their groups effectively.

The committee recommends the following actions be taken to strengthen the graduate group structure.

Eligibility. Each graduate group should have written rules and guidelines defining who is eligible for membership, how unaffiliated faculty are considered for membership, and the contributions expected of individual faculty in the group.

Graduate Group Leadership. Each school should have written rules stipulating the mechanism by which graduate chairs are chosen, their length of term, and the process by which their effectiveness is evaluated. Ideally, graduate group chairs should be senior faculty members who maintain active research programs and are internationally recognized for their scholarly accomplishments and leadership. Graduate group chairs should meet regularly with the dean or associate dean to which the groups report for discussions regarding the operation of the groups and their plans for achieving and maintaining excellence in Ph.D. education.

Meetings. Graduate groups should meet regularly throughout the academic year.

Educational Compact. Each graduate group should have written rules and expectations for its graduate students. These should define the key requirements and milestones for earning a Ph.D. in the group as well as
the standards and rules by which financial aid is awarded. They should form a clear educational compact which is understood by the doctoral students in the group and administered equitably and consistently by the chair of the group.

**Periodic Review.** To ensure that graduate groups are of the highest quality, the committee recommends that each graduate group formally review all aspects of its program during the next three academic years. The review should involve participation by faculty, students, and alumni. 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, including participants from outside the University. The review may occur as part of a regular departmental review, but nevertheless should specifically address all aspects of the functioning of the graduate group, such as: the effectiveness of the group’s leadership and organization; faculty participation and commitment to Ph.D. education; the quality of Ph.D. education offered; the effectiveness of student recruiting efforts and the quality of the students enrolled in the program; faculty/student relationships; graduate placement; alumni views of the program; and other issues of obvious importance. The results of the review should be presented as a frank report to the dean of the school responsible for the program, who then should present them, in appropriate versions, to the faculty and students in the graduate group.

The deans and the Provost should ensure that these reviews are carried out.

**Attracting Excellent Students to Penn**

In general, the supply of outstanding students who choose to enroll in doctoral programs in the United States today is smaller than the demand. This situation, combined with the unfortunate lack of awareness of Penn’s strength as an institution for graduate study, simply means that the active recruitment of graduate students by graduate groups is a necessity, not an option.

Recruitment programs should have two goals: to attract and matriculate outstanding Ph.D. candidates and to build Penn’s reputation as a first-rank university for doctoral education. Communicating Penn’s excellence in Ph.D. education and attracting outstanding applicants begins with University-wide efforts, and their importance should not be minimized. However, the committee believes that the most effective efforts will actually be at the school and graduate group levels.

A number of graduate groups and schools have already demonstrated the power and effectiveness of organized graduate student recruiting. These efforts have several characteristics in common:

**Awareness.** The graduate programs are “advertised” by means of visits of faculty to important feeder schools, through deliberate invitations for key faculty at those schools to visit Penn, and through effective literature describing the programs.

**Treatment of Applicants.** All applicants are treated with great care; their inquiries receive prompt replies and their progress through the admissions process is carefully tracked by designated faculty and staff.

**Visits to Penn.** Selected applicants are invited to visit Penn and their expenses are partially or completely reimbursed. The importance of campus visits cannot be overemphasized. If they go well, that is, if an applicant has an organized schedule of meetings with faculty and students currently enrolled in the program, if faculty show up for their appointments and communicate interest in Ph.D. education and commitment to it, if the Penn students they meet are good ambassadors for the program, and if the visiting student’s overall impression of Penn is favorable, the probability that the student will matriculate is much higher than if he or she never visited the University. Even if a particular student does not ultimately choose Penn, he or she certainly will talk with other students at his undergraduate school and influence Penn’s reputation as a serious choice for graduate education. Thus, personal visits are a powerful mechanism for attracting excellent matriculants as well as enhancing Penn’s visibility, but only if handled well.

**Opportunities for Teaching.** Many Ph.D. graduates make their careers in academic positions; virtually all must be skilled at scholarly communication. Therefore, all students should have the opportunity to make numerous oral presentations and to teach. Students who teach, either by choice or as a requirement for support, should receive formal training to help them do it effectively. This training may be most appropriately organized at the school or University level.

**Financial Aid.** Financial aid, more precisely its absence and instability, is in everyone’s best interest for a student to make steady progress toward the Ph.D. and to complete it within a reasonable period of time. The term “reasonable” is somewhat vague, but 4-8 years does not seem an inappropriate definition. If each student has an oversight committee of faculty and graduate group, and if graduate groups exercise their responsibility to review each student’s progress regularly, it is far more likely that students will earn their degrees in a timely fashion. The committee recommends that the Graduate Council consider adopting a University-wide upper bound on the length of time allowed for completing a Ph.D. degree, with the understanding that individual graduate groups may set stricter limits if appropriate to the discipline.

**Records.** Records of applicants, their sources, characteristics, and ultimate graduate school choices are carefully maintained and examined for insight and trends regarding the nature of the applicant pool and the effectiveness of recruiting efforts.

The committee believes that graduate groups at Penn must pay greater attention to student recruiting and makes the following specific recommendations.

**Admissions Standards.** Admission standards in each graduate group should be the same for all applicants within the group, regardless of their funding status.

**Graduate Group Recruiting.** Each graduate group should have an organized recruiting effort that draws on the experience of successful efforts already underway. A key feature of all of these programs should be the opportunity for outstanding applicants to visit Penn. Funds should be set aside at the school level for graduate student recruiting, including the reimbursement of expenses associated with such visits. Deans or their designees should coordinate and assist graduate student recruiting at the school level and hold graduate group chairs responsible for implementing and maintaining outstanding recruiting efforts.

**Literature.** Each graduate group should have attractive recruiting literature describing its program, faculty, and requirements. Funds should be set aside at the school and university level for the development and production of such literature.

**Providing Excellent Education for Doctoral Students at Penn**

The University will never attract truly outstanding matriculants to a graduate group that does not offer an outstanding educational program. There is no substitute for excellence, and excellence does not just happen. Several of the recommendations previously presented in the section on “Graduate Group Structure and Organization” are aimed at ensuring excellence in doctoral programs. A number of additional recommendations are presented here.

**Educational Compact.** As mentioned previously, each graduate group should have written rules and expectations for its graduate students. These should define the key requirements and milestones for earning a Ph.D. in the group as well as the standards and rules by which financial aid is awarded. Each student should have the same educational opportunity and level of faculty attention regardless of the student’s admission status or source of funding. It would be desirable for the progress of every student to be reviewed at least annually by the graduate group or sub-committee to ensure that it is satisfactory. The award of financial aid is an area of particular sensitivity. Several members of the committee believe that financial aid awards should be reviewed annually and continued only for students who meet clear guidelines for satisfactory progress toward the completion of the Ph.D. degree. The committee also has concluded that it might well be helpful for each student to have a thesis advisory committee appointed quite early in his course of study so that his or her progress is the concern of more than one faculty member.

**Length of Stay.** It is in everyone’s best interest for a student to make steady progress toward the Ph.D. and to complete it within a reasonable period of time. The term “reasonable” is somewhat vague, but 4-8 years does not seem an inappropriate definition. If each student has an oversight committee of faculty and graduate group, and if graduate groups exercise their responsibility to review each student’s progress regularly, it is far more likely that students will earn their degrees in a timely fashion. The committee recommends that the Graduate Council consider adopting a University-wide upper bound on the length of time allowed for completing a Ph.D. degree, with the understanding that individual graduate groups may set stricter limits if appropriate to the discipline.
ity, is a concern of many graduate students. Each graduate group should have well-defined and articulated standards for awarding financial aid and should administer them fairly.

Naturally, it would be best if all eligible doctoral students could be offered 12-month, multi-year student aid packages at levels appropriate to "graduate status." Many groups, particularly in the sciences and engineering, already offer such levels of aid, which generally include full tuition payment and a stipend of about $10,000 per year. Unfortunately, not all graduate groups have the resources to provide such levels of funding and are not likely to have them in the near future. Nevertheless, the committee recommends that, in so far as possible, students be offered multi-year financial aid packages so that their financial lives have some stability and predictability.

Overall, doctoral programs need increased funding for financial aid, which might possibly be met through the raising of specific endowment funds. Prestigious named fellowships would also enhance the visibility and attractiveness of Penn as an institution for doctoral study.

**Intellectual and Social Environment.** The intellectual and social isolation felt by some graduate students has been mentioned previously. It would be lessened and the educational environment strengthened if graduate groups were to organize student/faculty coffee hours, seminars, and other appropriate social affairs. Many foreign students would appreciate being invited to dinner during holiday time. A number of graduate groups have efforts of this sort underway; in some cases, several groups work together to hold daily coffee hours which are well-attended and popular with both faculty and students.

**Alumni Relations**

The committee recommends that each school develop and maintain accurate alumni records for Ph.D. graduates and work to continue doctoral alumni involvement with the University after graduation. In general, it appears that Penn's efforts to maintain contact with Ph.D. alumni have been far less effective than those of comparable universities.

**Students from Under-Represented Backgrounds**

It is important that Penn be effective at recruiting outstanding women and minorities into Ph.D. programs and that the University provide an environment for doctoral education that is sensitive to and supportive of their particular needs. The focus of this problem varies from field to field. For example, women are historically under-represented in science, engineering, and medicine; men in nursing; and African-Americans and Hispanics in many fields of advanced study. Our long-term goal should not simply be equal opportunity for all in advanced education, but equal achievement in each field by students from all backgrounds.

Equal opportunity for all begins with the process of graduate admissions. Some members of the University community have suggested that traditional definitions and criteria of 'excellence' may be too narrow and may operate unfairly in the case of applicants from under-represented backgrounds. In particular, there is a concern that some graduate groups and schools rely excessively upon the results of the Graduate Record Examination and other standardized tests, which may not, in fact, be good predictors of success for under-represented students. It is essential that the graduate admissions process be sensitive and responsive to the diverse signs of achievement and promise among applicants and not be rigidly bound to narrow definitions of excellence.

Progress toward a time of equal opportunity and achievement in doctoral education will not occur without leadership at all levels of the University. In fact, the president, provost, and deans have been very active in recent years in working to ensure that minority students have equal access to opportunities for advanced education at Penn, as well as to increase the minority student population at the university and promote the hiring of faculty from under-represented groups. For example, the number of tenure-track African-American faculty has increased from fewer than 30 several years ago to 47 at the start of AY 88/89, and annual minority graduate fellowship support has increased from $120,000 to $600,000.

The committee believes that further progress in advancing the progress of under-represented students will require strong leadership at the graduate group level. There is a difference between intellectually supporting the concept of equal opportunity and working to make it a reality. It is important that graduate groups do both.

Some graduate groups are already meeting this challenge. For example, the Graduate Group in English has been particularly successful at recruiting, matriculating, and graduating African-American doctoral students. The number of African-American doctoral students in English has grown from 0 in 1980 to 10 today. During that time, steadily increasing numbers of African-American students have earned Ph.D. degrees at Penn and accepted appointments at prestigious institutions.

The growth of African-American enrollment in the Graduate Group in English did not just happen; it was the result of a multi-year planned effort led by an African-American faculty member with the enthusiastic participation of many others in the graduate group. It demonstrates that achieving a high level of African-American enrollment is possible and underscores the importance of graduate group commitment and the presence of African-American role models among the faculty.

To strengthen Penn's efforts toward equal opportunity and achievement for all in doctoral education, the committee recommends the following:

**Faculty Hiring and Retention.** The University should continue its active program of recruiting and hiring faculty from under-represented backgrounds, among them, African-Americans, Hispanics, and women. However, simply hiring new faculty is not enough. The University must work to retain faculty from under-represented backgrounds and to ensure that they are encouraged to achieve and treated fairly throughout the promotion and tenure process.

**Student Recruitment.** Efforts to recruit minority students into doctoral programs should be strengthened. The 5-year plan of each graduate group should include an explicit strategy for recruiting under-represented students. Each plan should identify principal sources of under-represented students and propose specific efforts to acquaint them with and attract them to Penn's programs.

**Financial Aid.** Financial aid offers to students from under-represented backgrounds should be as attractive as feasible. For example, Fontaine fellowships might well be awarded with multi-year commitments.

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**Recommended Actions: Deans and Central Administration**

Most of the recommendations in this report have focused on activities at the graduate group level, in the belief that excellence in doctoral education begins there. However, the committee recognizes that its recommendations will fade in the file cabinet without strong leadership from the deans and the central administration. The deans and the central administration must be actively committed to and involved in doctoral education. Accordingly, the committee urges the following actions:

**Importance of Ph.D. Education:** The President and Provost should clearly articulate the importance of Ph.D. education to the University community, including the trustees, and be committed to developing the resources needed for excellence in it. Deans should lead in ensuring excellence in the doctoral programs that report to them and also be held responsible by the Provost for their efforts in meeting the challenge.

**Faculty Incentives:** To encourage faculty to work hard to achieve excellence in doctoral education, it must be an issue of obvious importance in tenure, promotion, and salary decisions. The deans and Provost should ensure that it both is and is known to be so. In particular, a faculty member's record of doctoral teaching, advising, and dissertation supervision should be a mandatory item in all dossiers for tenure or promotion. In addition, deans should work to enhance the prestige and rewards associated with serving as graduate group chair so that outstanding faculty will agree to take the position and work diligently at it.

**Graduate Group Review.** The Provost and deans should lead in implementing the committee's recommendation that each graduate group undergo periodic internal and external reviews, beginning with a self-study during the next three years.

**Vice Provost for University Life.** The VPUL should be active in
promoting the quality of graduate student life at the University. The Provost should consider making the VPUL an ex-officio member of the Council of Graduate Deans to ensure that he or she understands and can respond to the special concerns of doctoral education that relate to University life.

Graduate Group Clustering. The clustering of graduate groups with the goal of enhancing the visibility of Penn’s doctoral programs should be encouraged. Examples of possible clusters include area studies, languages and literatures, engineering and physical sciences, and cultural studies. Clusters could be active in student recruitment and the improvement of facilities for research and scholarship. For example, an Engineering and Physical Science Cluster might undertake to create a short recruiting videotape on science and engineering at Penn which would be sent to prospective doctoral students. The Council of Graduate Deans is the natural group to lead in establishing formal graduate group clusters.

Graduate Fellowship Pool. The committee strongly recommends continued real growth in the size of the graduate fellowship pool. Graduate fellowship support is essential to effective graduate student recruiting and retention. The committee was pleased to note that the Graduate Council has already urged the Provost to give high priority to an increased graduate fellowship pool.

Safety and Security. Safety and security are major concerns for the Penn graduate student population. Included are a wide range of issues; after-hours restrictions on building access, safety for walkers on the campus, the training of students to be aware of security concerns, and specialized training in laboratory safety, and many others. The committee urges Penn to consider safety and security as major problems of high priority which must be addressed in university-wide efforts led by the central administration.

Provost’s Retreat. The committee recommends that the Office of the Provost organize a yearly retreat for graduate group chairs. The goals would be to affirm the importance of doctoral education and the critical role of graduate group chairs in leading it, share information about successful programs of recruiting, placement, alumni relations, etc., raise the awareness of graduate chairs about the activities of other graduate groups at Penn and the various resources available for enhancing doctoral education, and help identify critical problems in achieving excellence in doctoral education at the University.

Records. At the present time, it is virtually impossible to obtain in any simple way detailed information about the doctoral student population across the University. Some records are here, some there, and others nowhere. The quality, format, and accessibility of information varies greatly from school to school. The committee recommends that the Office of the Provost, perhaps with the Council of Graduate Deans, establish University-wide standards and mechanisms for recording information about doctoral programs and their student population. Ideally, the information should be in a single database easily accessible to appropriate users.

A Final Word

This report makes many detailed recommendations for how to improve the quality of Ph.D. education at Penn, attract outstanding matriculants to Penn’s doctoral programs, and increase the university’s visibility as a leading institution for doctoral education. Virtually all are variations on the theme of commitment. The principal leadership of the University—the President, Provost, and deans—must make it clear that doctoral education matters at Penn. Each school and the university as a whole must have mechanisms for knowing which graduate groups are functioning well and which are not. Graduate group chairs and faculty should be rewarded for excellence in doctoral education and held accountable for mediocrity. No one should rest in the illusion that outstanding doctoral education happens without hard work.

The prospects for doctoral education at Penn are bright indeed. So many of our programs are already world leaders. Many others have the quality of faculty and resources needed to achieve the same status. With proper leadership, accountability, and commitment, Penn can soon both be and be recognized as a leading center of excellence in doctoral education. Why not make it happen?

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Stephen Steinberg, Provost’s Office
Saul Winegrad, Medicine
Wayne Worrell, Engineering
Professional Education

Throughout its history, the character of the University of Pennsylvania has been determined in large part by its professional and graduate schools. Penn is known for and wide for its eminent professional schools—including the first medical college, the first law lectures in the colonies, and the first collegiate school of business in the nation. Nine of Penn’s twelve schools consider themselves to be professional, and they are a major source of Penn’s worldwide reputation for excellence. Indeed, Penn is unusual among private institutions in its variety of such schools.

Penn is also unusual in that all of its schools are located on one campus. As concluded by the University Development Commission sixteen years ago, “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.” Stressing the need for “One University,” the Commission called for greater interaction among the University’s schools, both in teaching and research.

In the intervening years the University’s planning efforts have reflected the recommendations of the earlier Development Commission’s report and have encouraged closer linkages among students, faculty, and academic programs. As part of the Five Year Planning process initiated in the fall of 1988 by Provost Michael Aiken, the Working Group on Professional Education was asked to focus on both the desirability and extent of linkages among the professional schools.

This report addresses the following questions:

1. What are the current linkages among the professional schools—in faculty, students, research programs, curriculum, and outreach activities?
2. What are Penn’s aspirations for linkages among its professional schools?
3. What are the impediments to achieving interschool linkages?
4. What recommendations are offered to enhance the scope and depth of linkages among the professional schools?

Members of the Working Group on Professional Education represent the entire set of professional schools at Penn—those that award practitioner-oriented degrees. These include Dental Medicine, Education, Fine Arts, Law, Nursing, Medicine, Social Work, Veterinary Medicine, and Wharton. Although Engineering does not consider itself a professional school, it does have a professional constituency and so was included as well.

As in the earlier Development Commission report, the Working Group began with the thesis that linkages are desirable among the professional schools and with the other schools at Penn. By sharing ideas, concepts, and methods, linkages enrich the research and teaching programs of the University. The objective at the University level should be to create an environment that fosters and encourages linkages among the professional schools and to reduce the impediments to such linkages.

Current Linkages

What sorts of linkages currently exist among Penn’s professional schools and to what extent? One type of linkage is the interaction that might occur in the pursuit of research and teaching programs. These linkages include faculty holding secondary appointments, service on Graduate Groups in other schools, or participation in inter-school research projects. Also included are linkages based on students pursuing joint degrees or taking courses in other schools at Penn.

A second kind of linkage is the commonality of concerns and opportunities that confront the professional schools, such as the appropriate role of academically-oriented practitioners, the financial aid burdens borne by professional students, or the role of continuing education. Although each school might best deal with these concerns and opportunities by separate and independent means, there could be value in University-wide dialogue or coordination to initiate creative solutions to these issues.

A further distinction in considering current linkages is the extent to which they are formal or informal. The Working Group is of the opinion that formal linkages represent only a small percentage of the “connections” that actually occur across professional schools. Among formal linkages are the recorded instances of secondary appointments, joint degree candidates, and jointly-funded research contracts. Informal linkages include a host of interactions, such as guest lectures or joint research, which are not recorded, or where transfer of payments between schools does not occur. It would be unwise to assess the level of professional school linkages by formal indicators only. Informal linkages are pervasive throughout the University and actually may have greater effects on multidisciplinary output than formal linkages.

The Working Group attempted to assess the formal linkages that exist. It found the documentation of formal linkages to be very incomplete.

Faculty Appointments. Two indicators of faculty linkages are the participation of University faculty as holders of secondary appointments outside their home schools or as members of Graduate Groups. Exhibits 1-3* provide data on these indicators.

As to secondary appointments across schools, they are modest in number as formally recorded by the record of Trustee approval. Only two percent (40 out of 1,802) University faculty hold interschool appointments by this count (Exhibit 1), although an additional 180 faculty hold secondary appointments in other departments within their schools. The Working Group is of the opinion that this number considerably understates interschool faculty linkages. The count of secondary appointments from the catalogs of each school suggests many more such “affiliations” (e.g., “Affiliated Faculty,” “Other Penn Faculty”), but they do not appear in the formal records of the Trustees, have been allowed to lapse, or are more informal in nature.

Among all of Penn’s Graduate Groups, almost 60 percent (40 out of 67) involve faculty from more than one school. This is a strong indication of the breadth of interschool linkage, although the incidence (or depth) of such linkage is not as strong. Graduate Group overlap tends to be concentrated in the Biomedical area where several faculty serve on more than one group, such that the total Graduate Group membership (190) is larger than the number of faculty in the Biomedical fields. Another 195 of the University’s 1,802 faculty serve on a Graduate Group beyond the boundaries of their own school. These data, however, do not account for the incidence of informal interschool alliances on doctoral dissertation committees, etc.

Another indicator of linkages would be the occasional teaching of courses beyond the faculty member’s primary school. Since there is generally appropriate financial reimbursement between professional schools, data could be collected on the frequency of such teaching. On an informal level, faculty may also teach or offer lectures in another professional school with no transfer of payments. This is particularly true among the health professional schools where similar courses are given during the first two years of professional training (for example, biochemistry or physiology). These informal linkages may be impossible to quantify since they cannot readily be identified.

Research Linkages. Our efforts to document research linkages at Penn were frustrated by a lack of data. There is no central accounting of the full research output of the faculty and what reports exist do not readily allow classification of research as to whether or not it is interschool.

* Exhibits and lists referred to in this report are on file in the Office of the Provost.
One measure of the volume of interschool research exchange was obtained by looking at the research grants that had a prime account in one professional school and subaccounts in one or more other professional schools. Clearly, this is a very inadequate and incomplete measure, as it does not include the interschool research covered by accounts in only one school, with a portion of the faculty effort is put forth by faculty in another school. In these cases, the faculty member in the nonprime account school is simply paid from the prime account—there are no subaccounts.

Since July 1, 1984, just over thirteen percent of the research accounts handled by the Office of Research Administration could be identified as having a prime account in one professional school and subaccounts in another (34 out of 255). The inadequacy of this count as a measure of research exchange among the professional schools is highlighted by the finding that five of the professional schools—Dental Medicine, Education, Law, Nursing, and Social Work—had no such prime accounts, although there are many research interactions flowing from and to them.

In an effort to obtain a full list of ongoing interschool research among the professional schools, each of the offices of the twelve deans was contacted. The Working Group requested a list of all interschool research. The Law and Nursing Schools had such a list; Medicine and Dental Medicine indicated that they would attempt to generate a list; and the others did not have one. Finally, the Working Group examined the extent of interschool linkages in the set of centers and institutes at the University (Institutes by their very nature are supposed to be inter-school.) Exhibits 4 and 5 document the finding that 40% of these collectivities involve faculty from more than one school (29 out of 71 centers/institutes).

**Curriculum/Teaching Linkages.** All of the professional schools participate in the education offered to University undergraduates, sometimes by extensive student enrollments (as between Wharton and Arts and Sciences) and sometimes by more limited offerings of freshman or honors seminars. Three schools with professional constituencies offer their own undergraduate degree programs (Engineering, Nursing, and Wharton) with course requirements in other undergraduate programs, thus formally creating linkages. Other schools, such as the Graduate School of Fine Arts, manage undergraduate programs in Arts and Sciences, offering such majors as Design of the Environment, Urban Studies, and Fine Arts. Double majors, although not readily documented, are also a form of interschool linkage.

Dual degree programs constitute another indicator of student-level linkages. These programs were documented in a 1981 "Ad Hoc Report on Graduate Education" and at that time 21 such graduate programs existed. Our analysis in 1989 indicates that the number of graduate dual degree programs has increased to 38. Exhibits 6A and 6B show a breakdown of these programs by school at the graduate and undergraduate levels.

Data as to the number of students in dual degree programs is not readily available, however. It would be desirable to compare this number, when derived, to our peer institutions. It is our impression that, while the number of dual degree programs is reasonably impressive, the number of students enrolled is less encouraging.

**Outreach Linkages.** There are a variety of organizations in place which are facilitating linkage, interaction and, most importantly, effective attention to important community problems. Among these should be noted the Council on Community Relations, the West Philadelphia Collaborative, and a variety of school specific programs, activities and centers which contribute to developing linkages such as: the GSFA Center for Environmental Design and Planning, the legal studies program in the Law School in which law students give 50 hours to community services, the PRIME program in SEAS, George Weiss’ adoption of the Belmont School, the Teacher Education Program in the School of Education, community entrepreneurial counseling at Wharton, an outreach program sponsored by students in the Veterinary School and a health fair and meals for the homeless program in the School of Medicine. The School of Dental Medicine clinics are a primary source of dental care for the residents of West Philadelphia, and dental student organizations are involved in screening for dental care needs at local schools and nursing homes. The School of Nursing offers health assessment programs at the West Philadelphia Community Center and the People’s Emergency Shelter, and serves on the Policy Advocacy Committee of the Maternity Care Coalition of Greater Philadelphia.

Unfortunately, no data are available that would allow us to reflect on the depth of such linkages. It would be desirable to know the numbers of faculty, staff and students involved in such outreach activities, the extent of interschool involvement, and the percentage of effort devoted to community outreach.

**Conclusions**

Based on our analysis as to current linkages, we conclude the following:

1. A great variety of academic linkages exists among Penn’s professional schools.
2. The preponderance of these linkages is informal and not documented.
3. The recording of formal linkages is highly incomplete and makes it difficult to draw conclusions.
4. Rich sets of linkages exist on faculty appointments, student programs, and research programs.
5. Although there is a breadth of formal linkages, there may not be as much depth as desired.
6. Improved documentation of formal and informal linkages at the University level is a desired goal in order to definitively address and encourage linkages.

**Linkage Aspirations**

The linkage aspirations to follow are organized into the five major concerns of the Working Group. The questions relevant to each concern are:

**Faculty.** What is the appropriate faculty composition for a professional school? Can greater linkages be encouraged across professional schools?

**Research.** What should be Penn’s ambitions for interdisciplinary research among the professional schools?

**Curriculum/Teaching.** Are interschool linkages in teaching and curriculum desirable? How can they be encouraged?

**Students.** Do professional schools share certain common needs that should be addressed?

**Outreach.** What is the role of the professional schools in community outreach? Should the professional schools better coordinate their community outreach activities?

**Faculty**

As a general principle, the Working Group believes that faculty linkages across professional schools is a desirable goal in furthering the pursuit of knowledge. Indeed, Penn’s decentralized structure, although effective, may artificially insulate faculty from interdisciplinary approaches and bodies of knowledge. As such, the Working Group aspires to increase the number of secondary appointments across schools as a means of building linkages and expanding perspectives.

As to faculty composition across the professional schools, the Working Groups is concerned that there is a very substantial number of non-standing faculty teaching in the professional schools. Exhibits 7 and 8 show both that non-standing faculty outnumber standing faculty in the professional schools (sometimes by a considerable margin of 3 to 1) and that the trend line for the University as a whole shows the gap widening. There is little reliable information regarding the more intangible elements of their status, role, and involvement in the faculty communities at the various professional schools.

The Working Group aspires to the creation of a welcoming and supportive environment to those engaged in the practice of a profession who have the ability and inclination to make part-time teaching an important and regular part of their professional lives. By the same token, the Working Group is concerned with the balance between fully-affiliated and part-time faculty. In principle, our aspirations would be for fewer, well-qualified in teaching and practice, and better integrated non-tenure track faculty. However, the strength of this aspiration varies by school.

**Research**

The Working Group is concerned that the present school and departmental division of the University may not represent the optimal structure for the creation of future knowledge. It is necessary to encourage interdisciplinary research that is not bound by organizational boundaries.
The Health Professional Schools all teach similar subjects during the first and second years of their curriculums (e.g., biochemistry, anatomy, pharmacology, etc.). Each school has its own department and department chairman for these subjects, and each department is responsible for both the education of the students at their particular professional school and the research relevant to that department. This organizational structure works well in preserving the autonomy of each school and each department, but raises serious concerns relative to the redundancy of resources for research, how research is structured in the future, and the number of personnel necessary for teaching similar subjects. The most pressing concerns relate to research among the Health Professional Schools. Most research is not logically structured along department lines, but is based at either the molecular, the cellular, the genetic, or other mechanistic levels. The organizational structure of the professional schools, therefore, isolates researchers in different schools even though they may be performing similar research but just on a different cellular model. It also results in the redundancy of resources for these projects since each school must fully equip laboratories for each of these departments.

In looking to the future, the University must assess how research will be organized in the 21st century, and how best to allocate resources for the equipment of laboratories to accomplish such research. The University clearly should want to achieve the most collaboration among its researchers and to allocate its resources efficiently and effectively without redundancy. Such a plan may necessitate a reorganization of the Health Professional Schools and their basic science departments. The benefits that may result include:

1. freeing up funds by eliminating redundancies in both research equipment and faculty;
2. putting researchers together who are working on similar projects which would potentially increase and improve collaboration;
3. allowing funds to be spent for other capital projects, recruitment of more research faculty, and building of additional research space; and
4. eliminating some faculty redundancy by having one faculty that could teach all health care professionals, which would allow for additional faculty recruitment in emerging areas.

Thus, the Working Group’s general aspiration is to encourage interdisciplinary research. The imperative for the Health Sciences may be greatest. In order to do so, it will be necessary to lower the organizational walls which capture the faculty in particular fields and to encourage broader interaction on research topics across the University community. It may also be necessary to encourage interschool research grants, development efforts on research funding, and faculty research seminars in the University as a whole.

Curriculum/Teaching

The University should encourage both students and faculty to participate in dual degree programs and interschool courses and to access relevant courses in schools other than their own. Such programs and courses will foster the development of students who can achieve a broader educational experience than any single professional school can offer and will enrich the professional schools because they will be able to offer a variety of multi-disciplinary courses to their students. It is the role of a university to foster and encourage such programs and their accessibility. However, to accomplish this, the professional schools must be encouraged to work together to eliminate all administrative obstacles that impede such linkages. The University, in turn, must also work to eliminate the administrative obstacles that prevent professional schools from successfully achieving such programs.

The Working Group has identified a number of topics that have some commonality across professional schools. These include:

1. professional ethics (confidentiality, codes of ethics, etc.);
2. regulation of the profession from within and by government;
3. basic methodology skills (specifically among the health sciences) including statistics;
4. economic forces (those facing the profession, particularly among the health sciences); and
5. the “impaired” professional.

Most of the schools have designed and implemented some courses on these issues but they are heavily oriented toward their particular profession. For example, a Center on Professionalism has been established at the Law School—with interests across professions—and each school has set up some type of program on “ethics,” geared toward ethical dilemmas in its profession (e.g., medicine, law, etc.). Not all schools have seminars or lectures on regulation of the profession, basic methodological skills, economic forces, or the impaired professional, although among the Health Professional Schools, particularly among the research faculty, seminars on basic methodological skills are scheduled through research forums.

In general, the linkages among the professional schools on these common issues are almost nil. However, a number of these topics may be more broad-based and relate to issues facing any “professional person.” It is around these latter topics that the University should promote interschool collaboration.

Beyond these common issues, faculty could be involved in designing and teaching in courses with a “general” education perspective for undergraduate and graduate students in Arts and Sciences and other professional schools. For example, medical and law faculty could teach a collaborative course on such issues as the delivery of health care and legal services, the ethical/legal issues surrounding substance abuse and drug testing, and the problems of aging and death. Faculty from professional schools could be involved in the introduction of more humanity-oriented courses within the individual professional schools by utilizing works of literature, philosophy, art, films, etc. The professional schools and Arts and Science faculty could collaborate and design such programs that could be utilized by students from both undergraduate and graduate schools. Such courses do not exist presently.

Certain interpersonal skills and instructional skills are also common to any excellent professional. For example, interviewing skills, problem-solving and decision-making skills, teaching skills, computer skills, etc., are important for all professionals. Although each professional school may approach the teaching of these skills independently, it may be appropriate to encourage more interschool collaboration. There is no interschool collaboration at present.

Continuing education programs offered by the professional schools represent a further commonality. Most of these programs are offered to practicing professionals. Whether or not the courses are given under the auspices of the University, all faculty at Penn who participate in Continuing Education courses are representing the University. For this reason, the University must have some assurance that the courses given by the University faculty meet the high standards appropriate for Penn. For certain schools with strong centralized Continuing Education offices that can guarantee the quality of the courses to the University, this is not a problem. However, professional schools that allow the entrepreneurship of its Continuing Education officers to sanction individual courses, at their own discretion, to set up and run a Continuing Education course without any overall monitoring of the quality of the course. This latter model is problematic over the long run to the University.

Each professional school appears to have a different administrative structure regarding Continuing Education. For example, the Dental School has a director of Continuing Education and all its programs are run out of that office. The Medical School has no centralized administrative structure, although it has a director of Continuing Education. In fact, individual physicians at the HUP/VAMC complex can decide to run or participate in the Continuing Education course, and they design and administer the courses, and collect the monies. These courses are run not under the auspices of the University, but in conjunction with national organizations such as the AMA, the ACP, etc.

The University should encourage each professional school to set up a centralized Continuing Education office to oversee the courses given by faculty members of their own professional school. Without a strong Continuing Education office within each professional school, there are a number of problems facing the University:

1. The financial reimbursement for these courses may be taken by course directors and may never be allocated to either their departments or schools.
2. There is a possibility of the misuse of the University’s name by course directors who have full-time faculty appointments at the University.
3. It is important that the University documents the participation of
faculty members in such courses to make sure that they do not exceed the one day in seven allowed for such courses.

4. Neither the professional schools nor the University has any quality control regarding the type of Continuing Education courses given by faculty at the University;

5. Since all Continuing Education courses use similar resources for such courses (e.g., printing, marketing), there may be a redundancy in the use of resources when the courses are run by individuals and departments and not by schools or the University.

Students

While there remains some uncertainty as to whether it is “excessive,” it is clear that the level of student indebtedness has grown over the last five to ten years. One consequence of this increased level of student debt is the financial barrier that it places upon the selection of post-graduate careers; students with debts of $50,000, $100,000, or more simply cannot afford to enter service occupations which historically have had low rates of remuneration. Diversity in these professions will be reduced. In the case of students from disadvantaged backgrounds, their subsequent contributions to such occupations are being put in serious jeopardy.

Even students opting for other career paths face considerable financial burdens. Recent graduates, many of whom are in the early family formation period of life, must borrow in order to establish their practices, thereby adding to their already large educational debts. At the very least, the University must provide its students with adequate financial planning at both the beginning and conclusion of their professional training.

Unlike undergraduate students, many of the University-mandated responsibilities required of professional students demand their being on campus late at night. Given these requirements, the University must give more attention to the security of professional students during these hours. Particularly important is the need to ensure that students can return to their apartments or cars without risk of personal injury.

The psychological and physical well-being of professional students requires constant attention. Substance abuse appears to be an increasing problem among professional students. The availability of information and counseling is not being addressed uniformly across campus. The problem of substance abuse is particularly acute given the federal requirement that the University be able to certify that it has established a “drug-free” environment in those areas involving patient care.

Outreach

The overall goals and aspirations of an outreach program in the University, and the linkages that are a means towards their accomplishment, range from the promotion and development of a general attitude or ethic within the University family to the solving of specific problems facing communities. A general goal is to develop in the students a concern for the well-being and betterment of both their community and the global community. A popular phrase today is “think globally, act locally.” There is a perceived history of an uneasy relationship between professionals and society, but it is apparent that an increasing number of students today are aware of the critical problems in the community, and are motivated to contribute their time and expertise to addressing critical problems in the community. Many of the faculty, staff, and administration are also ready to make a contribution. The University should continue and increase the promotion of community involvement in West Philadelphia as well as in the entire City, the region, and communities elsewhere in the nation and the world.

An important goal which may be accomplished through increased outreach activities is to increase involvement by minorities in the University. Certainly, outreach activities reach the entire community, but a good deal of community activity in Philadelphia, and especially West Philadelphia, naturally involves a high proportion of minorities, and many of the existing and emerging programs, if effective, will benefit minorities. Increased involvement here and elsewhere over the long run could contribute to increasing the number of these minorities and women in the student body, on the faculty, and in the management positions within the University.

The examples cited demonstrate that there are a variety of organizations in place which are facilitating linkage, interaction, and, most importantly, effective attention to important community problems.

Given the variety and complexities of the problems being addressed and the number of participants, the formation of one central organization dedicated to outreach is probably not advisable. A dispersed model, as exists, is appropriate.

Impediments to Achieving Greater Linkages

Although the values of Penn’s faculty might favor interschool linkages, there are a number of obstacles that seem to limit the pursuit of such linkages, especially the formal linkages. These impediments fall into four categories: (1) lack of synergies, (2) information barriers, (3) financial barriers, and (4) bureaucratic obstacles. The time and effort costs to the faculty and professional school students in overcoming these impediments frequently may be judged by them to be greater than the benefits to be achieved by pursuing interschool activities.

Lack of synergies. If we apply the criterion that linkages require synergy, this limits the number of interschool linkages that are likely to occur on a formal basis. The number of truly synergistic fits, whereby the merits of linkage are greater than the merits of individual school activity, may not be great, especially when the costs (time and effort) of creating linkages are taken into account.

Information barriers. A major obstacle to linkages is the limited available information about persons, courses, and research projects elsewhere at Penn that would provide collaborative opportunities. Penn is a large and complex institution and it is not always easy to identify the set of scholars working on a specific problem. Indeed, even when formal linkages exist (as in joint degree or interschool programs), there may be information barriers to taking advantage of them. The present sources of centralized data substantially underestimate the interschool linkages that exist, especially informal linkages.

Financial barriers. Responsibility-based accounting, despite its advantages for the University, may act to discourage interschool linkages. In the research domain, for example, responsibility-based accounting rewards the school that holds the research grant. If professional schools place pressures on their faculty to contribute to school overhead, then a contest is set up among them for the retention of the full grant account. This tension is not likely to be conducive to exploring new exchanges. The incentives for any one Dean operate in the direction of keeping the research activity within his/her own school. Faculty, of course, start from the substantive value of the exchange—but the financial incentives may be imposed upon them. Coordinated interschool efforts to obtain funding for research may also be made more difficult. Any one school is likely to be unenthusiastic about having some of the product of its development efforts benefit another school.

In the teaching domain responsibility-based accounting may also limit linkages. There is a loss of tuition revenues that presently occurs if a student from one professional school takes courses in another professional school. This is a disincentive for the schools to encourage large numbers of students to participate in such programs and/or courses. In addition, faculty members who participate in such courses may feel that their academic careers could be in jeopardy (e.g., tenure) because they may not get “credit” for participating in such interschool courses at review time. Some faculty may have similar concerns about interschool research activities.

Bureaucratic obstacles. Finally, the administrative complexity of the University may act to discourage linkages. Formal linkages, such as joint research grants or secondary appointments, may be discouraged by the administrative review process that must be encountered. The bureaucratic impersonality of Penn may hinder outreach programs because of the perceived inaccessibility by community groups.

For dual degree and interschool courses, administrative complexity may hinder enrollments. Most school catalogs have no information on who is the contact person responsible for dual degree programs or interschool courses. Students attempting to design such programs are hindered by different academic calendars across professional schools and difficulties in scheduling course offerings across schools. Grading is non-uniform. In all, little encouragement is given to student linkages in degree programs and course enrollments.

The Working Group’s recommendations to follow try to address these impediments and to achieve the vision of one university. Our recommendations are based on concepts neither of centralization nor integration, but rather on openness in flows of ideas, people and funding.
Recommendations to Enhance Professional School Linkages

The Working Group’s recommendations that follow are meant to form a foundation for further discussion and documentation. We have tried to make definitive recommendations, based on the available evidence combined with our opinions. We also recognize that resource constraints may limit the viability of some of our ideas. The recommendations comprise five categories: faculty, research, students, curriculum/teaching, and outreach.

Faculty

Recommendations focused on encouraging interschool faculty linkages and on specifying the appropriate faculty compensation for professionals schools follow.

1. The University should establish a committee, with representatives from the professional schools, to evaluate the balance of fully-affiliated and part-time faculty (including clinician-educators and practice professors) within the University and the feasibility of better integrating these faculty members into the academic affairs and intellectual life of the University. It is our view that in some schools there would be fewer such positions but with an expanded role of those remaining. This would allow greater continuity and quality control of teaching by non-traditional faculty.

The appointed committee should gather recommendations about the part-time and other non-standing faculty positions from every school, and should consider the desirability and feasibility of standardizing the content, the qualifications and the institutional role of these positions. The committee should assess the budgetary implications of any recommendations it might make. The committee—or some other appropriate University authority—should clearly identify on a continuing basis the number of such faculty members teaching in the various professional schools.

2. The University should make every effort to support the professional schools in the appointment of outstanding faculty members with interdisciplinary interests and with due regard for diversity of race, gender and experience. Special financial allotments should be made available to foster this objective.

3. The University should provide greater information to professional school faculty members regarding the teaching interests of others within the University. Collaborative teaching should be encouraged through appropriate adjustments in teaching load and appropriate financial incentives. The University and the professional schools should give such collaborative endeavors affirmative weight in making tenure decisions, rather than leave any impression that such endeavors reflect a diluted commitment to one’s discipline.

4. Faculty members should be encouraged to make their interests known in having secondary appointments in other schools within the University. Faculty members with secondary appointments should be encouraged to assume an active academic and administrative role in the school/department of their secondary appointment. The school/department of their primary appointment should make every effort to make appropriate accommodations, and should be mindful of a faculty member’s research, teaching and service elsewhere in the University when making promotion and tenure decisions. The University should keep accurate records of the number and location of secondary appointments. Budgetary disincentives at the school and University levels should be reduced.

Research

If the current intellectual recognition of the importance of interdisciplinary approaches to the major issues of the world—be they scientific, social, economic, or cultural—is reflected in the organization of universities, then new organizational mechanisms have to be devised in the future. In view of the enormous resources required and the need for efficient organization to optimally use these resources, the topic of research is of particular immediate interest. Until this set of issues is addressed, however, the University of Pennsylvania should be actively encouraging research cooperation among schools and should be removing any disincentives to that cooperation. The Working Group’s review of the extent and nature of interschool research activities among professional schools leads to several recommendations.

Curriculum and Teaching

Recommendations as to curriculum and teaching comprise five categories: dual degree programs, interschool courses, the teaching of “common” subjects, continuing education, and special concerns regarding the health sciences.

Dual Degree Programs. Based on the belief that dual degree programs represent an important linkage but that they are not encouraged, the Working Group recommends that the University should encourage the professional schools to:

a. better identify in their catalogues the existence of dual degree programs and interschool courses;

b. identify the admission criteria to such programs and courses;

c. identify the person(s) responsible for such programs and how to contact them;

d. encourage professional schools to eliminate as many conflicts as possible in class schedules, vacation schedules and variation in grading to promote dual degree and interschool courses; and

e. obtain from each professional school its specific objectives (number of admissions) and plans for its dual degree programs.

Interschool courses. Students should be encouraged to take courses in other schools of relevance to their intended professions. In order to encourage professional students to consider courses in other schools, the following additional recommendations are offered.

a. The University should revise its rules for allocating tuition revenues at the graduate level so that tuition revenue for a particular course unit is shared between the student’s “home” school and the school providing the instruction. For instance, tuition revenues could be shared between the two schools involved.

b. The University should consider a mechanism that would enable a school to pay the difference between a particular faculty member’s salary and the average salary (at comparable rank) of the school which seeks to acquire his/her services to teach a course.

c. The University should support and encourage faculty to participate in interschool courses by making sure that promotion committees recognize the importance of such participation.

Teaching “Common Subjects”. Five topics have been identified by the Working Group as having commonalities across professional schools. These are: professional ethics, regulatory activity of the profession, basic methodological skills, managing the professional practice, and the "impaired" professional. In order to more definitively explore these commonalities, it is recommended that:

a. The University should set up a Task Force with representatives from all the professional school to explore the feasibility and desirability of having interschool courses which address the issues outlined above.
b. If deemed desirable the University should encourage and facilitate students to take such courses. To accomplish this, the recommendations listed under Interschool Courses above must be included.

Continuing Education. Our recommendations here focus on limiting the entrepreneurial nature of Continuing Education in many of the departments of the professional schools.

- The University must consider Continuing Education in a programmatic way for all of its full time faculty members.
- The University must make a statement regarding the role of faculty in Continuing Education courses, the relationship of such courses to their professional schools, and the standards of quality control for such courses.
- The University should assure that each professional school set up a centralized Continuing Education office that can work independently to monitor Continuing Education courses, monitor faculty participation in Continuing Education courses, and work with the University to achieve synergies across schools.

Health Sciences. The decision to move forward and explore the possibility of reorganization or integration of the Health Professional Schools will have far-reaching effects for the University of Pennsylvania well into the 21st century. For that reason, the recommendations that are made are not for implementation of such a plan but more for further explorations. A Task Force from the Health Professional Schools should be set up to explore the viability of an alternative organizational structure to the present professional school structure.

The Task Force should explore:

- The organization of basic science departments and research across molecular, cellular, and genetic lines.
- The possibility of developing research space for such researchers in contiguous buildings or space.
- The feasibility and desirability of having a single faculty teaching basic science curriculum to all health care professionals.

Students

The recommendations focused on professional school students fall into three categories: financial aid, student services, and stress and substance abuse.

Financial Aid. Recognizing the major financial indebtedness assumed by professional school students, the Working Group recommends the following:

- The University should develop a form of financial assistance for those professional students entering public service and academic careers. For instance, loan forgiveness programs might be created, particularly if the participants were employed in underserved areas.
- The University should develop a financial planning service for its professional students. This service could be made available through the Office of Student Financial Aid or the various professional schools.
- The University, either on its own or in consort with other Universities, should assist its graduates with assistance in gaining access to the capital necessary to finance their educational and professional start-up costs.

Student Services. Security for professional school students, many of whom work late at night and live off-campus, is a serious concern.

- The University needs to review its parking regulations in order to provide access to University parking lots for professional students who must stay late.
- Security in these lots and other places frequented by professional students must be increased.
- University shuttle service must be more flexible so that students may be dropped off closer to their cars or homes.

Stress and Substance Abuse. The psychological and physical well-being of professional students, and indeed all of Penn’s students, requires the University’s attention.

Outreach

Specific recommendations to encourage further “outreach” activities and to enhance the value and impact of these activities follow.

1. Communicate within the University on a regular basis about each professional school’s activities, achievements and opportunities regarding outreach. Where possible solicit specific expertise and interest to join with others to address particular problems. Regular inserts in the Almanac, and Gazette and other media vehicles would be appropriate. Also, publicize University activities and opportunities in local newspapers, informing and inviting the larger community to join with the University.

2. Develop means of recognizing, encouraging and supporting greater involvement by students. Fellowships, work study funds and other forms of student aid could be earmarked specifically for community-based research and outreach. Internships for service to communities could be offered for credit or as an integral part of study towards the degree, as is required in the undergraduate Urban Studies major. Payments on loans could be forgiven for students committed for a time to careers in public service (as the Law School does now).

3. Encourage the University staff to participate in outreach by recognizing achievement (i.e. as one criterion for merit increases in salary) and perhaps providing released time with salary as recognition of the importance of this contribution to the University and the community.

4. Develop a form of “clearinghouse,” perhaps reaching across various organizations to bring communities with specific needs together with the appropriate people and resources of the University. Opportunities should be evaluated for those which would benefit from University expertise (especially cross-disciplinary where a coordinative role is fruitful), research and action.

5. Recognize that service to the community is not as significant a criterion for promotion, tenure and salary increases for faculty as it is purported to be in public universities. This aspect could be articulated more strongly in the Faculty Handbook as one of the expectations of faculty activity. Service or “citizenship” activity is mentioned as one of the criteria (page 32, paragraph 3) but refers only to activities within the University and service to one’s profession.

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International Dimensions

Rationale for International Dimensions

The University of Pennsylvania recognizes that teaching and research are international in scope, commensurate with America's global commitments. The strength of American higher education, like the strength of America's economy and stature in the coming decade, depends on a significant extent on the ability of universities to make international competence a major priority.

Derek Bok, president of Harvard, recently stressed the importance of international perspectives and programs that link American universities to the international scene. Additionally, in February, 1989, a panel of Governors warned that the economic well-being of the United States was in jeopardy because so many Americans are ignorant of the languages and cultures of other nations.

Richard W. Lyman, director of Stanford's Institute for International Studies, put the case for international education most forcefully in a recent speech when he said, "An understanding of foreign language and culture and, even more important, of the social, political, and economic factors affecting international relations are now critical to a modern education. American involvement in the rest of the world, and vice versa, has now reached levels unprecedented in our history... Our entanglement is now a fact not only of alliances but of cultural, economic, and social relations. And we suddenly find that we are a people astonishingly ill-prepared for this situation, ill-equipped to understand it and too ill-informed to provide the context for intelligent policy-making regarding international matters."

Internationalization of the curriculum must be seen as an imperative matching of national needs and the responsiveness of American higher education to meeting those priorities. It is not simply a matter of America's competitiveness in world economic, strategic, and diplomatic matters, but of anticipating the implications of the internationalization of the new European community in one direction and that of the East Asian countries, particularly Japan, in the other. Nor can we continue to see these issues as occurring elsewhere; East Asian and Western European interests have an enormous impact in American domestic projects today. 'Internationalization' connotes simply the interpenetration of domestic and international economic issues, the increase of international competition in domestic economies, and also the growth of international opportunities.

The preparation for an integrated, internal European alliance beginning in 1992 increases diplomatic and economic pressures on the United States to devise strategies of accommodation. If economic issues have rendered internationalization particularly acute, movements in our own cities and schools make internationalization a domestic issue. Global interdependence may be measured in terms of changes that have radically altered the nature and make-up of American daily life in academia and elsewhere.

The proportion of foreign languages spoken within the territorial United States as a matter of course has dramatically increased. Major American cities have foreign language advertising media, newspapers, radio stations, and TV. Universities have increasing numbers not only of foreign students, but of American students for whom English is a second language. In recognition of the 'internationalization' of the American population, the University of California has recently announced new entrance guidelines abolishing all vestiges of ethnic quotas.

In short, the move towards global interdependence matches the dramatic heterogenization of American society (and of the university student body) of the last decade. However, American higher education and its support mechanisms, particularly funding sources, have been slow to respond to the global forces of internationalization. While Penn has welcomed diversification and been as proactive as any major research institution in fostering international competence, the efforts have been disparate, rather than coordinated. Penn needs a comprehensive, essentially focused plan of action for international competence in the undergraduate schools, the Graduate School of Arts and Sciences and the professional schools.

Almost daily, news reports reflect the growing concern that American universities have a mission to prepare their students for a new international role, one in which America participate, rather than dictates grounds of interaction. This sea change in America's international role requires a cultural reorientation, a profound alteration in attitudes towards other people, other cultures, other languages. While we take it as natural for foreign students to come to study in American universities, we need to put greater emphasis on American students' going abroad.

One example may illustrate the asymmetry in the current ratio of foreign students coming to the U.S. as compared to American students studying abroad. 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 that 2654 international students studied at Penn last year, while only 522 Penn students studied abroad. It is true that most of the former group come to Penn for professional or graduate degrees, whereas the latter group, the Penn students, go abroad for a semester or a year as part of various Penn programs. Nevertheless, Penn students will not obtain a proper perspective of America's status in world affairs without the experience of living and studying abroad, either on a Penn program or on an exchange with another university fostered by Penn. The issue is not disciplinary content, but the context and culture of disciplines.

Clearly, our students are not getting the exposure, training and experience requisite for a responsible role in a society in which America's advantage, its ability to compete successfully, and its ability to maintain some form of diplomatic 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 in the face of growing evidence that Americans possess far less international competence than conditions dictate. A recent survey commissioned by the National Geographic Society found that one American in five could not name a single country in Europe, three in four could not find the Persian Gulf on a world map, half could not find South Africa, more than half could not find Japan, and only one in seven American adults could locate the United States on a map. More sobering, the 18- to 24-year-old cohort, precisely the age of the university population, performed less well than respondents in their fifties. Such statistics do not merely reveal unfamiliarity with geography, but point to a basic inability to conceptualize the significance of international interdependence and the changes it has brought.

It is natural that universities assume the lead in defining the problem and in helping to overcome deficiencies in international competence. 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 Planning Committee on International Dimensions has pursued its task in the conviction that Penn has a leadership role to play in charting the course of internationalization of higher education in the '90's, and that all segments of the community have a contribution to make and something to gain from the effort.

International Dimensions at Penn Now

The committee quickly discovered that Penn already has a considerable international flavor. 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 considerable depth on which we may draw in this domain. We also noted the 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.
A. Office of International Programs

Although the undergraduate and professional schools maintain some form of formal or informal administrative structure to deal with matters of international education, there is currently only one vehicle at the university level charged with overseeing international activities: the Office of International Programs, headed by Dr. Joyce Randolph and reporting to the Provost and the Vice-Provost for University Life.

The OIP serves as a general coordinator of the University’s international contacts and programs and seeks to promote and assist international activities throughout the University. It attempts to articulate the international character and global perspective of Penn.

More specifically, it acts as a liaison with newly admitted foreign students regarding visas, housing, transportation, banking, health insurance, etc. It advises foreign students with personal problems, such as cultural and academic adjustment, financial planning, emergencies. It provides similar services to visiting foreign faculty and researchers.

Looking outward, the OIP serves as the University’s principal information office for undergraduate study abroad. It coordinates approximately eight hundred Penn undergraduates each year about foreign study, and works with faculty committees to administer 19 Penn-sponsored study abroad programs in the United Kingdom, France, Spain, Italy, West Germany, Nigeria, China, Japan and the U.S.S.R. The OIP coordinates recruitment, nomination, and in some cases selection of students for a variety of postgraduate fellowships and grants for international study. These are but a few of the activities coordinated on a daily basis by the OIP. The Committee found that the OIP performs a major task for the University well and with limited resources.

B. International Presence: Faculty

Internationalization at the faculty level takes a number of different but predictable forms, e.g., standing faculty of international provenance, foreign exchange faculty, postdoctoral fellows, researchers, and visiting foreign faculty. Penn faculty regularly visit foreign universities as lecturers or visiting faculty. They participate in such ongoing exchange programs as Penn-Leuven (Belgium) or Penn-Ibadan (Nigeria). In addition, Penn has begun to establish a few beaches abroad, either through foreign study programs, centers jointly organized with foreign universities, or outreach efforts such as the Wharton School’s offices in Paris and Tokyo.

Almost all of the testimony taken by the Committee on faculty involvement in international aspects of teaching, research, fieldwork, and exchanges stressed individual or small faculty group initiative as the key factor in developing and maintaining the current effort. Although some schools, such as Engineering, Medicine, and Wharton, have begun to plan school strategies in this area, most of the present programs originated with faculty members (working together or individually) in response to specific research or pedagogical needs.

C. International Presence: Students

As previously noted, a much higher percentage of foreign students come to Penn than the reverse. Although there are exchange programs and fieldwork possibilities for graduate students in some fields, fewer opportunities exist for graduate students to go abroad than for undergraduates. Even when there are compelling reasons for graduate students to go abroad (for archival research or fieldwork) finances make it difficult to impossible for the students to go. While those Penn undergraduates who do study abroad often speak enthusiastically about the experience, the Committee found that foreign study is simply not a major force in the undergraduate culture.

That foreign study for Penn undergraduates is not a major consideration suggests that the undergraduate curriculum does not emphasize foreign study as a significant aid to internationalization of the curricu-

*Appendices I through VI are on file in the Office of the Provost

D. Foreign Languages and the Undergraduate

Penn has been a national leader in developing proficiency-based foreign language teaching. Such teaching allows progress to be measured in terms of a student’s real abilities to function in a foreign language rather than simply to “serve time” in the classroom. Forty foreign languages are currently taught at Penn, including a pioneering proficiency-based Arabic course that will be the model for other major universities. We are a center for Slavic and East European languages, Middle Eastern languages, and South Asian languages.

In terms of numbers, approximately 1380 freshmen and sophomores (presumably mostly men) take proficiency examinations at the end of their third or fourth semester (or equivalent) of foreign language study. The languages in which proficiency-based instruction has been most thoroughly integrated with the approximate number of students examined per year are as follows: Arabic 70, French 425, German 125, Hebrew 45, Italian 120, Russian 45, Spanish 550. In addition, Hindi, Portuguese, second year Chinese and Japanese encourage a proficiency orientation to teaching and learning even if there is no proficiency requirement. In sum, the vast majority of students who study foreign language at Penn are enrolled in courses that are oriented toward communicative language proficiency, even if these courses are not all governed by a proficiency requirement.

The techniques and programs for teaching foreign languages are thus particularly well-developed and forward-looking at Penn. Undergraduates should be well-served by our facilities. Unfortunately, the Committee was unable to identify evidence that real efforts had been made to coordinate the resources in foreign languages at large. Until planning can take place that brings foreign languages into programs in general (beyond the several foreign language departments), Penn’s resources in foreign language will continue to be underutilized and the undergraduates insufficiently prepared.

Other nations routinely demand that their university and professional school students be extensively trained in foreign languages. SAS has an explicit proficiency requirement (meaning one cannot earn a B.A. in SAS at Penn without demonstrating an intermediate level of competence in speaking and writing a foreign language). We do not integrate this requirement with the overall course of study, yet another instance of our failure to coordinate our strengths in a plan for international competence in the university community.

According to the logic of the traditional division between professional schools and the liberal arts, SAS is the only one of the four undergraduate schools that traditionally has had a language requirement, even though it has not been well-integrated into the four-year curriculum. Recently, the three professional undergraduate schools have begun to explore and implement foreign language options. Nursing and Engineering have incorporated foreign language instruction, and Wharton has increasingly stressed foreign language competence in its programs.

No horizontal integration of foreign language instruction, requirements, or coordination of efforts has been undertaken between the four undergraduate schools on a continuing basis.

E. International Presence: Programs, Institutes, International Area Studies

The Committee found that there are a number of programmatic and research centers and institutes with a focus on international area studies. Some are readily identifiable, such as the four area studies centers in SAS and Wharton (the Joseph H. Lauder Institute of Management and International Studies, Middle East Center, South Asia Regional Studies Center, Center for Soviet and East European Studies). Others, like the
As with other aspects of international resources, the Committee found little coordination or interschool collaboration between centers, programs, and research institutes dealing with international matters. The single exception we found to this lacuna was the Lauder Institute which might well serve as a model for such collaborative activity.

The Committee also found evidence of a need for interschool pooling of faculty resources to achieve the critical mass needed to create new international area focus groups or institutes. For example, the Latin American and East Asian areas have an impressive number of faculty from the various schools focusing on different aspects of the respective areas and cultures. To organize an area studies group of sufficient breadth and prestige to attract outside funding, such as Title VI of the Higher Education Act, from any one school has not been possible. Were the resources of a group of schools marshaled, however, the picture would be very different.

This is yet another example of how fragmentation and a lack of an overall strategy for international activities leads to a failure to achieve Penn’s potential.

Assessment of Current International Activities at Penn

There is a need for a paradigm shift in Penn’s approaches to the whole issue of international competence. Penn has an important involvement with international educational dimensions within schools, but lacks coherent focus at the university level; we have not evolved a Penn culture of international education. Unlike some other universities, Penn has not developed a holistic approach to the issue.

Different Schools at Penn are active in the arena of international study in different ways. The Committee found ample evidence of international presence, programming, and expertise in the Schools but no overall focus, no sign of a coherent plan, nor more than token efforts to coordinate activities in this sphere between departments, divisions, or as part of a well-articulated School plan. 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, Penn students have yet to see the reciprocal advantage to their studying abroad in significant numbers. Nor has the Penn faculty articulated a philosophy of international competence in a manner that would encourage a shift in undergraduate perception.

At present the Office of International Programs plays a major role in current international activities, exchanges, foreign study, and welcoming foreign students and faculty to Penn. The OIP is working to capacity at the moment, and limited by staff and space from playing a larger role in abetting internationalization of the university culture given present support levels. It would be extremely difficult, for example, for the OIP to handle many more undergraduate foreign study programs and yet handle 70% of Penn undergraduates participating in Penn programs abroad now. The statistic is not greatly altered by the 100 or so students who participate in Penn summer programs (188 in 1988, 108 in 1989). Clearly, we need to increase student participation in international programs.

Responsibility Center Budgeting does not by itself create decentralization but it encourages it by providing powerful incentives for interschool initiatives. In the recommendations that will follow, it must be borne in mind that responsibility center budgeting’s disincentives will have to be overcome if the recommendations are to be fully effective. There will frankly be little reason for Schools to implement some of the recommendations without a serious change in the way the responsibility budgeting system currently operates.

To summarize, Penn currently does many international activities well but with little overall coordination. We need a coordinated strategy for international competence within and between Schools. Coherent articulation of existing requirements, programs, and research centers will assure that resources are focused in a manner that assures effective use. Frequently, interschool coordination will result in a much stronger configuration of personnel than would be possible on a single School basis. Logically such pooling of resources should put Penn in a stronger position to bid for outside support such as Title VI or similar grants.

Above all, a coordinated policy would help to change the university culture so that faculty and students would understand the national imperative for an internationalized curriculum effectively integrated across traditional disciplines and competencies. Mechanisms must be established that will allow effective planning and implementation of international activities at the school and interschool level. Schools will continue to undertake individual initiatives, but it would be beneficial if a model could be found to provide incentives for interschool and cooperation in curricular and research matters.

Overall Goals for a University Strategy on International Education

A. University Mission Statement

Top priority should be given to developing a University mission statement articulating the scope, importance, and general guidelines for international education. Once drafted (by a successor committee to this one), it would be helpful for the Trustees to endorse it with a declaration of their own supporting the mission statement and its goals. The mission statement should ideally include an assertion about what the University can contribute to other countries.

B. Institutional Linkages Abroad

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 individual disciplines must continue to shape the kinds of programs in which their students and faculties engage, it is necessary to encourage greater participation in international study by designing programs and exchanges in areas where international study has not been traditionally contemplated. Almost any subject may be enriched by exposing students to the way in which it is studied in the university cultures of other countries.

Faculty exchanges offer a particularly useful way of fostering international education. The University must develop guidelines for selecting new institutional affiliations abroad (see Appendix II for an outline), and work out a protocol for implementing such exchanges. Other matters related to faculty exchanges that require attention:

- systemize faculty exchanges
- create incentives for faculty participation
- publicize faculty exchange opportunities
- disseminate information about external funding sources for international exchange
- strengthen logistical support for faculty exchanges
- expand contacts with developing countries

C. Penn-Sponsored Study Abroad Programs

Any strategy for international competence must involve a significant number of students in various forms of foreign study options. To this end, it is imperative that the University develop a unified vision of purposeful study abroad. This might be accomplished in part by adopting a declaration of the role of study abroad in the mission of the University, along the lines of the resolution adopted by the faculty of SAS in December, 1984 (Appendix IIIb).

Foreign study should become an integral part of the curricula of the undergraduate schools by linking it in meaningful ways to individual disciplines. Study abroad planning should be an integral part of curricular planning in departments and schools. The success of such planning and programs will depend very much on the involvement of standing faculty in planning, recruitment of students, advising, resident directorships of programs, and post-program evaluation.

At present, most faculty development or training programs are language- or culture-oriented. Language acquisition, important though it may be, does not constitute the sole reason for study abroad. Unless non-language disciplines undertake a commitment to foreign study, by developing programs related to competence and training in their own disciplines, research interests, and professional training, we will fail to achieve increased undergraduate participation in study abroad to a level commensurate with our commitment to the educational value of such activities.

Recommendation for top students may be viewed as one rationale for implementing foreign study in the undergraduate professional schools. Recent trends show a significant increase in dual degrees and dual majors. The opportunity of offering flexibility and variety in programming, plus the chance to combine the goals of the undergraduate professional schools with language and area studies should prove attractive to prospective applicants as America becomes increasingly conscious of the importance of international competence. The Launder Institute in Wharton and SAS offers a model that might be adapted to
other schools, and with appropriate modifications, to the undergraduate environment.

In addition to increasing the types of programs available, we found an urgent need to diversify the participants and the geographic locations of the foreign study programs. More men and minorities should be involved in foreign study, and more programs should be located in areas outside Western Europe. A recent CIEE (Council for International Educational Exchange) report recommends:

Study abroad in developing countries and those outside the traditional Anglo-European settings should be a matter of high priority, with special attention to creating educational exchange programs in the Western Pacific Rim as well as in the rest of Asia, the Middle East, Africa, Latin America and Eastern Europe.

A follow-up committee (perhaps an expansion of the existing SAS Study Abroad Committee) should study and recommend plans for expanding study abroad by working with schools and programs to decide which countries, programs, and foreign universities should be contacted with the aim of setting up new programs. The same committee should review new and existing programs periodically (Appendix III for guidelines used currently by the SAS committee). Where advantageous and educationally desirable, consortial arrangements with Penn’s peer institutions should be explored as an option to creating our own study abroad programs. Consortial arrangements offer a convenient way of expanding beyond the traditional model of study abroad programs.

In planning new programs, the follow-up committee should study the difference between graduate and undergraduate study abroad programs and needs. The two categories are very different and should be so treated. In both cases, however, financial aid will be a factor in any increase in student participation, although financial aid for graduate students may be easier to work out, as is the case with existing exchange programs in foreign language departments. The financial aid dimension, however, does need to be included in planning for expansion of programs.

Penn has the potential to become a leader among peer institutions in the domain of discipline-specific study abroad. We must build upon the existing momentum to set specific objectives for study abroad that can be targeted in the development campaign.

D. Language Across the University

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

In recognition of this need, schools have begun to move in the direction of language program options. It would be a real first in American higher education, if Penn were able to introduce a program of language across the University whereby degree programs in all schools introduced various options in foreign language proficiency. Where such options already exist, schools might be encouraged to take another step. SAS, for example, might explore an entrance requirement that sets a minimum standard of proficiency in a foreign language for matriculation. (The University of Minnesota recently instituted a low-level proficiency entrance requirement in Arts and Sciences which has had a salutary effect on increasing emphasis on foreign language study in Minnesota high schools.)

While each school would have to choose the options best suited to its needs, programs of language in individual schools might take the following forms (see also Appendix IV):

1. Language for special purposes: Medicine, Law, Nursing, Social Work.
2. Discourse specific courses paired with language courses in which a particular subject matter is taught by qualified instructors in a foreign language.
3. Field Work Options: Community field work (as in the School of Social Work) coupled with academic seminars, not dissimilar to the existing Urban Studies model.
4. Cultural Perspectives Courses: Courses taught in English to accompany introductory language courses of a more traditional nature.
5. Short-Term Study Abroad Options: Programs of short duration which permit students throughout the University to observe their field of study within a different cultural and linguistic setting. Such programs include academic seminars and cultural perspectives.

In sum, schools could elect to implement their own models of language initiative; they could work through the Penn Language Center (see below); or they could do a combination of the above.

D.2. The Penn Language Center. Penn should have a bi-modal structure for acquiring foreign languages. We should maintain our traditionally strong foreign language departments as the intellectual focus of linguistic and cultural study, on the one hand. At the same time, we should recognize that foreign language departments cannot offer a full complement of the languages necessary for truly a global perspective. In response, we have implemented the Penn Language Center to teach a wide variety of foreign languages not taught as focus languages in existing departments. The PLC uses proficiency-based methods to teach a wide variety of languages on a demand basis.

E. Internationalizing the Curricula

While the committee endorses in principle the infusion of undergraduate and graduate/professional curricula with international content and approaches, the development of specific recommendations must be the responsibility of a successor committee. The Laufer Institute offers an obvious model for this concept, but other efforts may also be cited, such as the recent strengthening of the International Relations Program.

We believe that curricular innovations will evolve naturally as language study, study abroad, and faculty exchanges take on greater importance in departments and schools.

F. Area Studies Centers

Appendix V contains a detailed discussion of the crucial topic of Area Studies Centers. Penn has had considerable success in developing strong interdisciplinary programs in Area Studies that are school based. We now need to explore the possibility of extending school-based expertise to harness the full resources of the University. We forward the following recommendations for action in this crucial dimension of international education:

1. The selective strengthening and expansion of area studies at Penn should be articulated as a major goal in the University’s long range plan and should encompass all the schools.
2. The provost and deans should establish a committee to consider the positioning and organizational structure of area studies at the University of Pennsylvania. Membership should include appropriate deans, directors of existing area and international studies centers, and key faculty members representing nascent area studies programs.
3. The above area studies committee should also review thoroughly the concerns of area studies program directors with respect to library resources, faculty appointments and outreach functions. The committee should recommend ways to address these concerns.

G. International Students and Scholars

Two groups focused attention on the concerns of international students in 1988-89; at least one report has been published: “A Report on International Student Life” from the University Council Committees on International Programs and Student Life (Almanac Supplement May 2, 1989). Our committee did not wish to cover the same ground, and so limited itself to the following recommendations.

International students and scholars on campus are presently a largely untapped resource. At the same time, they are a resource that needs to be carefully supervised to assure that adequate funding is made available, from whatever sources, and that the optimal match between university and student/scholar need is assured.

We need to assess the ongoing support and resources for international faculty, including orientation English language proficiency, affordable housing and their families’ adjustment.

H. Outreach via School and University Programs

The sharing of Penn’s international mission with the community must rank as an important component of the University’s international mission. Penn has responsibilities to participate in cooperative service programs with such significant sectors as the K-12 schools, businesses, and community service organizations. Modest outreach programs have already demonstrated their effectiveness; more remains to be done.
Determination of appropriate (and feasible) goals should be jointly undertaken by university and community representatives. Mutual benefits should be clearly identified. The rationale for community outreach should be integrated with the university mission statement.

Current outreach programs include the following:
- Penn’s area studies centers provide extracurricular programming not only for the campus community but also for local colleges, schools, and community groups. (See Appendix V).
- Penn has taken a leadership role in the Pennsylvania Council for International Education (PaCIE), a consortium of over fifty public and private institutions of higher education in Pennsylvania. PaCIE’s major project is the establishment of model international education collaboratives throughout the state. Each collaborative is an interdisciplinary working team of teachers, program administrators, and faculty and administrators representing schools and colleges in a particular geographic region of the state. In some regions, local businesses and community service organizations are also involved actively in such collaboratives.
- With funding from the U.S. Department of Education, CGS administers the Penn-PaCIE Institute for Development in International Education, a program which assists other Delaware Valley colleges and universities in internationalizing their faculty and curricula. Most recently, the Penn-PaCIE Institute’s work has begun to focus on geography alliances.
- Continuing education programs of the College of General Studies and the Wharton School offer a variety of internationally-oriented learning experiences to the community.
- The College of General Studies and the University Museum provide a rich array of resources for school children in the realm of international cultures.
- The University Museum also sponsors the International Classroom, a program that arranges to have international students visit schools and organizations interested in learning about the visiting students’ home cultures.
- The English Language Program. Besides offering English language courses, this program provides such services as a Conversation Partners Program, matching international and other students in pairs for conversation practice in English and another language. ELP has also designed special programs for teachers of English from the USSR, Hungary, Czechoslovakia, Japan, and West Germany; Japanese business executives; Chinese medical scholars; international students entering MBA programs in the United States; international teaching assistants in SAS; international students entering the Lunder Institute, the Graduate School of Fine Arts, and the School of Dental Medicine.

V. Structure for Coherence

To achieve the goals outlined in Section IV, we propose the following “Structure for Coherence” designed to provide a coordinated strategy for international competence on the interschool and school levels.

A. Inter-School

1. Inter-School International Coordinating Commission on the model of the Academic Planning and Budget Committee, chaired by the Provost. Vertical and horizontal integration of the membership of the commission (school and university) will be crucial to its success and the membership is so constructed. For the commission to have the authority necessary for success, it must be provostial.
   a. Representation must be deep, that is, faculty, undergraduates, graduate/professional students, and administration (e.g., the Director of the Office of International Programs). Faculty membership should be made up of the chairs of the corresponding School International Coordinating Committees and other faculty involved in international activities. Students may be selected following similar principles.
   b. The Inter-School International Coordinating Commission (ISICC) will be responsible for working with schools to help coordinate programs, exchanges, or other international initiatives which would benefit from University-level involvement. In particular, inter-university linkages could be encouraged at this level, not only linkages with foreign universities, but also cooperative international programs with Iveys and other peer institutions.
   c. The ISICC should work closely with the Office of International Programs and have support staff.
   d. The ISICC will act on recommendations by Schools, recommend to the OIP, or oversee University policies in such matters as:
      (1) Effective dissemination of information about international resources at Penn to faculty and schools
      (2) Assisting in and helping to coordinate recruitment of faculty with international and area studies expertise.
      (3) “Language Across the University” initiative. Study and help facilitate where necessary inter-school and intra-school efforts to establish appropriate guidelines for study of foreign-language as outlined above in Section IV.D.
      (a) The ISICC will encourage and assist where possible and appropriate the four undergraduate schools to coordinate foreign language options.
      (b) The ISICC will help coordinate the services of Penn Language Center on inter-school scale where appropriate.

2. International Research and Area Studies Policy Subcommittee of the ISICC. International Research and Area Studies form a significant part of Penn’s intellectual life in Arts and Sciences, health sciences, business, engineering, and other fields. There are a number of Area Studies Centers, Programs, Institutes on campus now that do not “speak” to one another, even though some activities may be overlapping.
   The Office of International Programs is aware of the different programs, centers, institutes, but is neither authorized to act as a liaison to their staffs, nor to guarantee coordination of their activities.
   International Research and Area Studies currently function on an ad-hoc basis and at the initiative of interested faculty in one School who may not be aware of overlapping faculty interests or research in other Schools. The present situation makes it difficult for new programs, centers, institutes, but is neither authorized to act as a liaison to their staffs, nor to guarantee coordination of their activities.
   A permanent sub-committee of the ISICC to act as a liaison with the OIP, and the different area studies centers and international research groups could materially benefit this sector of the international effort at Penn. Membership on the permanent subcommittee would be drawn from the area studies centers and international research institutes or centers. An early task of the permanent subcommittee would be to work with the OIP to keep current and disseminate the International Inventory that keeps track of international resources and activities at Penn within programs, centers, and institutes. We need a detailed guide to the academic opportunities and research achievements relating to the study of other parts of the world. The permanent sub-committee would work with the ISICC to help coordinate international research and area studies at the university level. Although its role would be advisory rather than administrative, the sub-committee could be influential in the following ways:
   a. Help find support for existing and emergent programs, centers, and Institutes with an international focus.
   b. Advise on maintaining appropriate levels of library acquisition and holdings for international research and area studies. The strength of Penn’s collections in these disciplines is a matter of increasing concern. Public Law 480 is being phased out and funds must be located to take up the slack (PL480 facilitated book purchases in some countries with soft currency debts). The permanent sub-committee could work with appropriate library officials to exercise informed influence in setting acquisition priorities. A unified approach, here as elsewhere, is desirable.
   c. Work with the ISICC to devise and run an umbrella administrative entity for international area studies. A number of American universities organize international area studies under an “umbrella” administrative structure that facilitates administrative support, reporting to the federal government, and coordination of outreach activities. A joint administrative structure may realize economies of scale while providing centers with increased visibility and influence both within and without the university. UCLA, Stanford, Berkeley, and Yale all offer models of this kind, each with its own particular variation.
d. Work with appropriate university colleagues to encourage existing outreach activities and coordinate new initiatives as outlined in Section IV.H.

e. The sub-committee could seek to articulate a coordinated set of goals for international area studies centers at Penn, to enlarge the number and site of such programs, and to explore ways to implement the goals effectively.

f. Work with Schools and departments in developing opportunities for Penn faculty to work or carry out projects abroad.

3. Provide appropriate level of support to the Office of International Programs to assure that the expanded focus on international competence will have adequate resources.

The current mission statement of the OIP will be reaffirmed and the International Inventory must receive adequate support to permit imminent completion of the project as well as ongoing maintenance and updating.

As indicated at the beginning of this section, the Office of International Programs will inevitably expand its activities in the move towards coordinated international education at Penn and should be adequately supported.

We rely on the OIP to raise the visibility and increase communication about the University's international activities.

4. International Endowment. The current fund-raising campaign should set aside something on the order of five or six million dollars to create an International Endowment to be used selectively to encourage some of the preceding recommendations and others that will ultimately be proposed to increase international dimensions on campus.

B. Structure for Coherence: School

The Committee was reluctant to make specific suggestions to Schools beyond those implicit in the findings of Parts I-III of this report. We do feel it imperative, however, to recommend that Schools either implement or, where such a structure already exists, reinforce the authority of:

1. Coordinating Committee for International Competence. This will be the School equivalent of the Inter-School International Coordinating Commission and will normally provide faculty members to the ISICC. While the specific mandate of such a committee might vary from school to school, we feel that it must encompass oversight, planning, and coordination of the following areas:

1. Planning for International Competence
2. Foreign Language Options and Testing
3. Teaching and Research
4. Foreign Study Programs
5. Fostering faculty exchange programs
6. Encouraging and effecting institutional linkages

2. Establish some form of distributive requirements to improve international competence

VI. Conclusion

The preceding review of Penn's competencies and needs in the domain of international education, and the recommendations we have formulated to enhance the University's strength, form the beginnings of a broader and deeper focus on international activities at Penn. Over time, much more will have to be done to meet the needs of our students and faculties as we move toward and into the next century. The modest but high-level organizational structure proposed here will, we hope, start us on this journey.

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

The Working Group on Faculty Development has held extensive discussions among its members and with numerous other faculty and administrators in order to develop perspectives and priorities regarding the University’s needs for faculty development. This report summarizes our findings and presents the proposals that the Working Group considered and on which it was able to reach some consensus.

Faculty Development Objectives

Simply put, our ultimate objective is to improve the quality of teaching and research by faculty at Penn. Investments in our faculty, their skills and performance, deserve high priority. Early in our discussions we recognized that the scope and content of faculty development can be interpreted in different ways. The Working Group chose a broad interpretation, encompassing not only training and guidance for younger faculty, but also the incentives and “quality of life” issues that influence faculty performance throughout an academic career. On the other hand, while job satisfaction and morale may be important factors in how well Penn’s faculty do, we have tried to limit our concerns to initiatives that clearly foster improved scholarship.

Faculty Development Practices at Penn

Our surveys of faculty development programs at various schools and our discussions with faculty suggest a tremendous diversity among schools and departments within schools with respect to the objectives and practices of faculty development. There are clearly some high points and some low ones. Some schools and departments are making significant investments in their young faculty. They provide substantial laboratory facilities and research support to incoming faculty; they allow research time through reduced teaching loads; they provide instruction in pedagogy and research methods; and they offer guidance and mentoring, at least during a pre-tenure period. In sharp contrast, other schools and departments see their young, pre-tenure faculty as a transient group and therefore have little incentive to invest in their maturation. They place heavy teaching loads and non-teaching responsibilities on their younger faculty and/or they allow their young faculty to compete for a very limited number of tenure slots with little or no conscious effort to guide or form them. For those who do receive tenure, it appears that few departments at Penn (or elsewhere) have formal programs of faculty development relating to mature faculty.

Many of the differences among schools and departments reflect the nature or the traditions of the various disciplines. In the science and engineering fields, for example, large-scale shared facilities and clusters of related research call for major investments in equipment and technical skills, whereas in the humanities and social sciences the tradition of the solitary scholar frequently still applies. Nevertheless, some of the differences derive from different attitudes or philosophies, and some of them are the result of the very different financial constraints under which the various schools and departments operate.

In accordance with Penn’s tradition of decentralized decision-making at the school level, faculty development has been primarily a school responsibility. The Working Group feels that it would not be appropriate or effective for the University’s central administration to impose a detailed or rigid University-wide faculty development program. However, the University does have a central responsibility to promote faculty development in all schools, and to persuade those that lag behind to develop versions of programs pioneered by others.

Financial incentives can also be offered centrally; but, again, responsibility for developing faculty rests ultimately with the schools and departments. Some important aspects of faculty development are not costly; all schools can implement them. Other programs will incur substantial expense; but these should be seen as investments in faculty. As with any other use of capital funds, the costs of these programs should be considered relative to their benefits.

Faculty Development and the Academic Career

Many faculty development issues are specific to one of the stages of the academic career—young, tenure-track faculty; mature, tenured faculty; and retiring faculty. Effective faculty development at Penn will mean intervention at all points in the academic career.

Young Faculty. The issues pertaining to young faculty relate chiefly to initiation into the academic community and to the tenure process.

Optimal development of young faculty members calls for a conscious effort to provide mentoring and career guidance. For minority and women faculty in particular, the need for suitable role models who are available for mentoring and informal career-counseling may be especially acute. Programs to improve the teaching and research skills of young faculty may also be appropriate. Laboratory facilities and initial financial support for research are a pressing need for many young faculty. Some schools have already instituted a “junior leave” program for the purpose of scholarly research. In any case, the burdens of teaching and non-teaching responsibilities should not be so heavy as to prevent young faculty members from engaging in research.

The Working Group is concerned that some departments offer little expectation that junior faculty will receive tenure. This situation has numerous unfortunate consequences. From the perspective of the department, there is little motivation for investment in faculty development, and little incentive for senior faculty to take young colleagues under their wing in the context of mentoring or research-guidance roles. For the young faculty member, a conflict develops between departmental expectations and the need to make a reputation and research credentials in anticipation of another job search. Clearly, the best job candidates will resist coming to Penn if they sense that the University offers its young faculty little opportunity for personal development and little likelihood of receiving tenure.

Most members of the Working Group feel that the attitude that the University should invest in its young faculty is superior to the view that such investments are wasteful. Such a view has clear implications for policies on hiring and tenure promotions.

Mature Faculty. The period between the granting of tenure and the approach of retirement, often as long as thirty or forty years, is the longest period of association with the University. Since mature faculty are the backbone of the faculty, it is of utmost importance to maintain the enthusiasm of mature scholars in teaching and research. Many issues related to careers of mature faculty involve questions of research support and facilities, as well as more general “quality of life” considerations.

Most senior faculty find their way easily through the thickets of an academic career; but some faculty run into difficulty as a result of professional or personal problems. In some cases the difficulty may involve inadequate research assistance and research equipment or a temporary failure to obtain grants. In such cases, stop-gap funding or other assistance may put a faculty member’s career back on course. It is not always possible to “jump-start” a faculty member’s research or to retool an individual for a new field. Some senior faculty may need to optimize their participation in the University community through administrative duties, committee service, advising, or increased teaching. A wise personnel policy recognizes that members of the faculty will be able to make different contributions at different times in their careers.

Finally, there are faculty members who need professional guidance with respect to their careers or with respect to personal problems. Like any other large group of workers, the University’s faculty encounters its share of domestic problems, emotional crises, depression, substance abuse, etc. The University has established a Faculty/Staff Assistance Program and we are aware that other universities have taken similar initiatives. The current program, which is now used predominantly by staff, may not fully serve the special needs of faculty. There is a need, for example, for guidance with professional problems—how to direct one’s career and how to maximize one’s productivity. Personal problems may pose a different sort of challenge for academics than for other workers. The Faculty/Staff Assistance Program may have to be modified, or a specialized service faculty may be required.

The perception that the University rewards its mature faculty fairly for accomplishments in scholarship, teaching, research, and service is an essential element in ensuring an active, enthusiastic faculty. Certain concerns over morale can therefore be addressed through a wise and balanced salary and reward policy. At present, salary decisions at Penn are left largely to deans and department chairs. Salary differentials among individuals, departments, and schools are kept confidential. There was substantial disagreement among members of the Working Group as to whether the current system adequately provides for incentives and enthusiasm in the various dimensions of academic activity. Some Working Group members expressed the feeling that the system does not offer sufficient assurance to individual faculty members that they are being rewarded fairly. The general lack of information about salaries and other aspects of working conditions means that many
mature faculty, even ones who are well-rewarded, are not sure that they are being fairly compensated. While the Working Group does not call for eliminating the confidentiality of individual salaries, some members feel that a more informative system for setting salaries and other aspects of working condition of sufficient high quality could yield dividends in greater faculty satisfaction and improved incentives.

**Retiring Faculty**. The uncapping of retirement at the end of 1993 makes the issues of retiring faculty even more complicated than before. While the Working Group did not attempt to evaluate the implications of uncapping because other committees are responsible for such an effort. We note, however, that the terms of retirement affect the productivity of older faculty, the timing of their retirement, and their activities after they become emeritus. An important consideration from the institutional standpoint is that, as the academic market becomes tighter in the coming decade, retiring faculty members may become a valuable resource to meet the University’s teaching needs.

**Proposals for Faculty Development**

The Working Group has discussed a large number of specific proposals, but it has not attempted either to put forth a "wish list" or to establish precise priorities among the alternatives. Articulating such priorities would call for much more detailed information on the options and their costs than was available to the Working Group. Consequently, we present here our observations on the most important aspects of faculty development.

A **Faculty Development Policy**. The Working Group concludes that an explicit University-wide faculty development policy deserves high priority. The Provost should establish such a policy and it should be widely disseminated in the Faculty Handbook and in other publications. Such a policy statement should focus on principles and leave the details of implementation to the schools and departments, which are better aware of the needs of their disciplines. Within financial constraints, the Provost should provide incentives for schools to implement what they consider to be important steps toward faculty development.

**Reporting on Faculty Development**. Faculty development is a continuous process. The Provost’s policy should be reconsidered each year and the Provost should make a report on what has been accomplished and what still needs to be done. The Working Group does not favor the appointment of a new committee to consider the Provost’s report. Rather, it feels that the Senate Committee on the Faculty is the appropriate body to receive this report and to pass its evaluation on to the faculty.

**Young Faculty**. Younger faculty should be a primary focus of faculty development policies. The question of investing in these faculty members goes hand in hand with policy on hiring and promotion to tenure. It is the Working Group’s judgment that if we hire only those job candidates who have a reasonable expectation of achieving tenure, then investments in mentoring and research participation will come naturally.

The Working Group recommends that the University make greater investments in its younger faculty. All schools should at least be encouraged to match the efforts of the leading schools at Penn and elsewhere. The University of Pennsylvania can and should be a national leader in developing its young faculty.

**Research Support and Research Foundation**. The Working Group feels that additional sources of temporary research funding should be established. The actual dollar amounts required to provide temporary assistance may be relatively small, but they would make a major difference in the progress of individual careers.

Some specific questions arise as to how such funding might be made available. The Research Foundation, supplied with greater resources, might be a vehicle for meeting some temporary research support needs. In addition, flexible research funds should come from the schools. Another possibility that was considered is the provision of individual discretionary research accounts to help defray such expenses as research assistance, books, computation, supplies, equipment, release time, conference and research travel, etc. These funds would be assigned to individual faculty and would allow them to decide how best to support their own research priorities. (The September 1987 IDRA proposal has been discussed elsewhere.) While most members of the Working Group saw this as a meritorious suggestion, it was felt that the needs of faculty differ so much from school to school that this proposal would be best considered at the school level. Some schools already provide limited discretionary funds for scholarly purposes; others may want to consider such a system of research support.

Generally speaking, however, it is clear that large scale support for continuing research will have to be sought from outside sources. We suggest that the University find ways to be of greater assistance to faculty in finding sources of funding and in applying for them. The Office of Research Administration does an excellent job but is largely designed to meet the formal requirements of grantors and to administer contracts. The Working Group recommends setting up an organization that would help faculty find potential research support in government, foundations, and in business, and to help prepare the appropriate proposals. A professional approach to research grantmanship would be of great assistance to many faculty members.

**Faculty Development Programs and Faculty Development Fund**. A faculty development policy should call for programs that will improve and broaden the faculty’s intellectual capital. Faculty should have financial support to take advantage of opportunities to acquire knowledge of new technology, to learn computer skills relevant to their disciplines, to improve communication with related disciplines, and so on. Interdisciplinary seminars have been helpful as a way to cross disciplinary lines, and their expansion should be supported. Training in teaching skills, a program now implemented in some schools, should be extended widely, offering consultation for improved teaching to mature faculty as well as to young, inexperienced teachers. The Working Group suggests that a Faculty Development Fund, similar in organization to the Research Foundation, may be a useful approach to supporting faculty development expenditures.

**Fair and Informative System of Rewards**. All members of the Working Group felt that a fair and informative system of rewards is essential to maintain incentives and morale for the University’s faculty. There was not, however, a consensus on what, if any, new initiatives are needed. Some members of the Working Group felt that a process needs to be developed, at the school or department level, that would better inform individual faculty of their relative standing with respect to salaries, teaching loads, and research support. Possibilities for consideration include the distribution of salary statistics according to discipline, national averages and relative standings; annual consultations between department chairs and individual faculty members; and departmental or school salary advisers to help individual faculty put their salary situations into more accurate perspective. The Working Group did not see a need for additional appeal or grievance procedures.

**Retirement**. While the Working Group did not attempt to reach a conclusion on retirement matters, we did discuss various possibilities for partial retirement that would allow faculty who remain active to maintain faculty status and office and laboratory space. Such possibilities must be considered in light of their financial implications; admittedly some options will prove costly. It is clear, however, that many faculty who want to remain in active but limited teaching and research roles are concerned that current retirement procedures may deprive them of many of the facilities needed for continued intellectual productivity.

The Working Group supports the contention that a more active policy of faculty development, with broad support and direction from the University’s central administration, would yield significant improvements in the academic life and performance of Penn’s faculty.

**F. Gerard Adams, Arts and Sciences, Chair**

**Howard Arnold, Social Work**

**Richard Beeman, Arts and Sciences**

**Claire Fagin, Nursing**

**Louis Girifalco, Engineering**

**Dorothea Jameson, Arts and Sciences**

**Phoebe Leboy, Dental Medicine**

**Franz Matschinsky, Medicine**

**Anthony Santomero, Wharton**

**Peter Vaughn, Social Work**
Research

Penn's standing as a scholarly institution of the first rank is fundamentally dependent on the vitality of its research enterprise. Today, our University, like all major research universities, is facing rapidly escalating costs for basic research, increased competition for both senior and junior investigators, and increased restrictions on both federal and non-federal research funds. There is evidence that our position is slipping, particularly in the sciences. For Penn to improve its competitive position, increased and carefully focused investments in new facilities, new faculty, and new research programs will be required. What we do to build, reorganize, and consolidate our research investments in general and in the physical and life sciences in particular will affect the nature and prestige of the entire University into the 21st century. An institutional commitment to the advancement of the research enterprise, together with an organizational structure to carry out this commitment, is called for now.

The University is at a crossroads. If an appropriate investment is made to build on our strengths and if the atmosphere is made more conducive to the carrying out of research, we can take our place as one of the preeminent universities of the world. Without this investment, we are in danger of losing our position in the top tier of universities.

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.

Despite the importance of research to the intellectual life and prestige of the University, many of Penn's scholars—especially in the humanities and the social sciences—work without external funding. The University needs to seek and develop the means to fund these otherwise unrelating to scholarship and the creation of knowledge. In planning for research at the University of Pennsylvania, the preeminent universities of the world. Without this investment, we are in danger of losing our position in the top tier of universities.

Achieving the University's institutional goals in research and scholarship requires the preservation and promotion of an environment conducive to scholarship. The recruitment of new faculty and the maintenance of modern libraries, computer facilities, and laboratories are continuous processes requiring continual investment. It is critically important that the University be structured so that the faculty are encouraged to carry out research and given the time, facilities, and infrastructure necessary to allow research and scholarly activities to flourish.

The report that follows analyzes Penn's current status, examines factors that could spur the growth of research at Penn, and offers recommendations for general aims, specific initiatives, and organizational plans to optimize the use of resources.

Current Status

The stature of the University is directly related to the quality and vitality of the research of its faculty. In turn, the higher our standing, the better our ability to recruit the best students and the most distinguished and productive faculty. The reputation of the University is also a critical determinant in defining our influence on national and international policies, programs, and goals. 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 vitality of the research enterprise can be measured in many ways—by the strength of the University's libraries as centers of innovative scholarship, by the success of our Ph.D. graduates, by the reputation of our scholarly institutions like the University Museum, by the number of prestigious fellowships and honors won by its faculty and graduates, and by the amount of externally funded research. It is this latter measure that causes us particular concern. Sponsored research at Penn is a very large enterprise, with expenditures totaling approximately $170,000,000 in FY 1988 (Figure 1). The School of Medicine brings in approximately one-half of that amount. Other programs with major extramural sponsored research funding are those in Arts and Sciences, Engineering and Applied Science, Wharton, Dental Medicine, Veterinary Medicine, and Nursing. Altogether, these programs bring in over 85% of the total sponsored research dollars at the University. However, the growth in total expenditures for sponsored research at Penn over the last 5-8 years has been modest. When adjusted for inflation, total expenditures have actually remained relatively constant.

An important indicator of our ability to attract sponsored research programs can be obtained by examining our standing relative to the top 20 research universities in the United States. A widely used measure of a school's stature as a research organization is its ability to compete successfully for federal funds. Over the past eight years Penn's share of federal research dollars awarded to schools and universities has dropped from a high of 1.73% in 1981 to 1.51% in 1987. During the same eight-year period, Penn's national ranking of the amount of federal research dollars received declined from a high of tenth in 1981 to fifteenth in 1987. During this time federal funds received by the top 10 schools increased by an average of 62% compared to 1980 expenditures (Figure 2), whereas Penn's funds grew by approximately 50% during this period. The rate of growth at Penn was thus less than the average of the top 10 schools, which accounts for the fall in our national ranking.

Federal funds to the top 10 medical schools have increased by over 80% compared to 1980 expenditures. The Medical School of the University of Pennsylvania kept pace with the other schools rated in the top 10 through 1985 (see inset, Figure 2), but experienced a sharp decline relative to these schools during 1986 and 1987. Thus, although ranked fifth in 1981, Penn's Medical School has fallen to tenth in 1987.
Factors Necessary to Spur the Growth of Research

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 committee also believes that one of the principal concerns of the University is the status of Penn’s investments in the physical and life sciences and in engineering. Our peer institutions have made major investments in its research enterprise and has markedly improved its competitive position relative to other research-based institutions.

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 the arts, 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 has been 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. Of the 25 major research universities in the United States, Penn is one of the few that has science, medicine, engineering, and business on the same campus. Exploiting this advantage would bring financial benefits and would promote and synergistically foster the intellectually exciting environment essential to attracting and retaining top faculty.

Factors necessary for growth in research at the University of Pennsylvania include the following:

- Mechanisms must be established to identify critical areas of research and to foster cross-disciplinary research.
- Funding mechanisms must exist for making collective investments in critical areas of research.
- A broad commitment on the part of the central administration and Board of Trustees to the vitality of the research enterprise must be emphasized.
- An international reputation as a strong research center must be projected.

Recommendations

The committee recognizes that the cost of carrying out modern research is such that investments generally will need to be made in areas in which we have significant existing strength and which have a high probability of generating extramural support. Two areas of research in which Penn has been slow to make needed investments are addressed under “Specific Initiatives” below. On the other hand, not all research is likely to be eligible for substantial extramural support, and special consideration must be paid to research efforts in the humanities and social sciences that require long-term institutional support. The committee’s recommendations for the support of research at Penn and its plans to optimize the use of limited resources are designed to enhance these efforts. Central to these efforts must be the recruitment of the best possible faculty. It must be recognized that these individuals are highly sought after and that substantial investment will be required to attract them to Penn and provide the resources necessary for them to flourish.

General Aims

Faculty Recruitment. A major problem at any university is the continuous need to recruit young faculty with high potential, especially in light of the anticipated rapid depletion of the senior ranks beginning in the mid 1990’s. 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 Trustee Professorship program represents a significant investment that is beginning to address the latter problem, and it should be encouraged and expanded. It is through similarly unified efforts that we will draw young investigators to Penn to further bolster the research enterprise. We should expand the existing Trustee Professorship and term chair programs that bring promising scholars—particularly those engaged in cross-disciplinary research—to the University.

Discretionary Funds to Benefit Departments and Investigators. A great university must recognize and reward the research accomplishments of its faculty. It is specifically intended by this recommendation that funds be used to enhance the research environment of individual faculty members who have been particularly successful in obtaining outside research support. This will serve to recognize and acknowledge success and will enhance the productivity of our most successful faculty.

Graduate Student Support. Within the University, the link between research and Ph.D. education goes well beyond the relationship between faculty and doctoral students or principal investigator and research assistant. Research carried out by Ph.D. students contributes to the reputations of our faculty and the University. Most significantly, our Ph.D. graduates will take the new knowledge acquired and created during their doctoral studies and disseminate it among various intellectual communities. Their future accomplishments will reflect on their advisor, their department, and generally on the stature of the University.

From outstanding research programs emerge the best Ph.D. graduates. Outstanding research requires recruitment of the brightest and most
talented students. To be competitive in recruiting these students, it is critical to have a stable funding source for stipends and tuition. This may require the establishment of a fund to provide a stable support base for predoctoral students across the University.

Specific Initiatives
The committee recommends three specific initiatives that will have a significant impact on the research mission of the University. The first two are largely directed at creating organizational units more appropriate to research needs than a departmental organization and the creation of modern research space required for research in the physical and life sciences and in engineering. The third initiative will provide a vehicle to permit us to recognize and exploit opportunities in all fields of research, including the sciences and the humanities. Additional initiatives relating to research needs in the social sciences are anticipated during the current academic year.

Institute for Advanced Science and Technology. The University has proposed the creation of the Institute for Advanced Science and Technology, which will comprise five distinct but complementary and interacting centers:

- The Center for Excellence in Computer, Information, and Cognitive Science
- The Center for Excellence in Chemistry
- The Center for Excellence in Bioengineering
- The Center for Scientific and Technological Information Resources
- The Center for Technology Transfer

To house the programs of the Institute for Advanced Science and Technology, Penn plans to add 160,000 square feet of space through the construction of two new buildings and the renovation of a third.

Initiative in Molecular and Structural Biology. Molecular and structural biology has emerged as the central basis of research in the life sciences. Rarely in the history of science has a field developed so rapidly; understanding of genes, for example, is leading to the generation of new drugs and cancer therapies, and is central in the fight against AIDS. A large part of the federal research budget in the coming years will be devoted to AIDS research and to the sequencing of the human genome. A strong program in molecular and structural biology is imperative if Penn is to compete as a major research university.

Over 200 faculty at Penn and the Wistar Institute carry out research in molecular and structural biology. Despite this widespread activity and its extraordinary potential, efforts in this field have been stymied by lack of space, lack of coordination, and the inability of individual schools and departments to garner sufficient resources with which to recruit researchers of international renown.

To build on Penn’s potential, it is necessary to establish a University of Pennsylvania Institute for Molecular and Structural Biology to coordinate research programs, identify weak areas, facilitate the recruitment of high-caliber new faculty, and organize and improve core facilities. The required additional space would be provided by basing the Institute in a new Life Science Building containing at least 150,000 net square feet of assignable space.

Library and Information Resources. Scholarly information has been increasing exponentially in volume since the middle of the 18th century. More recently, the cost of scholarly information has begun to increase exponentially as well, creating a financial crisis for all information centers. Such growth requires that libraries carefully review available information, acquiring for the campus only that most needed and most important to local programs. Libraries also depend increasingly on electronic access delivery techniques to reach information stored or produced elsewhere and to allow vast resources available at other major libraries and information centers to be retrieved and delivered locally. The scholarly library of the 21st century will store locally a smaller part of needed information than in the past and will depend upon a structure of planned interdependence with other information centers to gain access to the full range of information and knowledge needed for research.

The University of Pennsylvania libraries need to integrate new technologies for the organization and dissemination of information with the traditional formats that, for the foreseeable future, will continue to be the major sources for scholarly information.

The Penn libraries have proposed the development of an electronic information environment. Over and above the need to increase funding for the acquisition of materials, funds will be required for the development and implementation of this technology. These needs should be a high priority for the Provost and the Academic Planning and Budget Committee.

Organizational Plans to Optimize the Use of Resources

Research Foundation and Research Facilities Development Fund. There is a major need for increased amounts of 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 their resources should be increased. The former should be used to establish and sustain core facilities to support research at the technological edge of scientific research. 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 of which extramural support is not readily available. This is especially important in the social sciences and humanities where small amounts of funding can significantly advance research projects. We recommend a doubling of the resources distributed through the Research Foundation and the Research Facilities Development Fund.

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. If a corporation is established, appropriate safeguards will need to be included to avoid conflicts of interest and to protect the academic integrity of our faculty.

Dean’s Council for Research. In this era of increased competition for external funding, it is especially important for Penn to mobilize its many strengths. The goal must be for us to capitalize on our strengths to create and strengthen that which is greater than the sum of its parts.

It is important that we establish new mechanisms to unite our strengths across schools and departments. Only in this way can we attract major support from the federal government and other external funding sources. A Dean’s Council for Research, similar in structure to the Council of Undergraduate Deans, could help facilitate interactions across the University. The Dean’s Council for Research would advise the Provost and recommend investments, funded at an initial annual level of $5,000,000, to accomplish the following goals:

- Facilitate proposals from schools for recruiting new faculty.
- Identify critical areas of research and provide resources to permit recruitment of faculty who will carry out research in these areas.
- Provide a mechanism for commitment of resources to interdisciplinary efforts including faculty in departments, institutes, and centers.
- Develop common facilities to be used by faculty in multiple schools.

Conclusion
Penn has been and will remain a major research-oriented University, but our position is in decline relative to that of our peer institutions. Major investments will need to be made in facilities and in faculty if we are to reverse this decline. Mechanisms will need to be established to ensure continuous planning and the most effective use of research funds.

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John Bassani, Engineering
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Ralph Brinster, Veterinary Medicine
Gary Cohen, Dental Medicine
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ALMANAC SUPPLEMENT December 5, 1989
During the past year the members of the working group on the Academic Information Environment have discussed and debated a broad array of topics associated with academic information at the University of Pennsylvania. These topics have ranged from specific issues such as computer assisted instruction to the more general needs of departments, schools, libraries, and of the University at-large. The committee felt, however, that the central concern common to all the topics considered was the capacity to deliver the highest quality information in a timely way.

What we have learned is that across the University there is a broad spectrum of data and information needs that are specific not just to an individual school or department, but to the individual faculty member, student or administrator. Because of this great diversity of needs, we concluded that in addressing the formal charge to the committee, this report should try to identify areas of common concern or interest rather than develop an operational plan. From this base, policies could be developed for allocating resources to meet the computing and information needs of the entire University community.

Objective of the Working Group

The Provost and the Academic Planning and Budget Committee have given the Working Group on the Academic Information Environment responsibility for designing a plan or vision which addresses the information and computing needs of the faculty and students. More specifically, the charge of the committee is to:

1. Determine what the information needs of Penn will be over the next five years and to recommend areas, including new technologies, in which the University should invest new resources to enhance the information environment. Describe the need to meld the functions of the traditional library with the development of an "electronic library" in such a way as best to link the Penn faculty and students with each other and with other research centers.

2. Describe the current state of academic computing and information resources and assess Penn's accomplishments in relation to other institutions.

3. Recommend programs that should be actively supported by the University, keeping in mind the multiple and diverse needs of the Penn community as well as the need to balance sources of knowledge with the technologies that bring them to the faculty and students.

This report seeks to address these charges, beginning with item 2, outlines of the current state of Penn's academic information environment and Penn's position relative to other institutions, followed by items 1 and 3, assessment of future needs and recommendations based on priorities established by the committee.

Current State of the Information Environment

PennNet

The benefits of expanded access to information over PennNet are shared by the entire Penn community. The laying of the fiber optic cable comprising the network's spine and the adoption of TCP/IP (Transmission Control Protocol/Internet Protocol) as the standard communications protocol have opened the Penn campus to the world, allowing for fast communications and exchange of information. In addition, PennNet provides individual faculty members with PennNet connections, how ever, has typically been made at the level of school or department. Many factors have governed such decisions, but user demand and ability to pay have, not unexpectedly, been among the primary ones. At present about 60 new users are added to the network each month.

The individual connections make it possible for a PennNet user to connect to numerous computers and information systems both on and off campus. The connections allow the user to share data and information via electronic mail utilizing INTERNET, BITNET, or other e-mail technologies, perform searches of library databases and library holdings via PennLIN, and upload and download data from different computers including those at Medicine, SAS and Wharton. The connections also allow the sharing of information between Penn and the supercomputing services at the John von Neumann Center, the Pittsburgh Supercomputing Center or the National Center for Supercomputing Applications. Furthermore, PennNet allows access to various commercial services such as Bibliographic Retrieval Services, Compuserve, Dialog and Dow Jones.

The predominant machines for large-scale processing at the University are IBM mainframe systems, including the SAS IBM 3090-180 vector processor and the administration's IBM 3080 and DEC VAX or Micro VAX computers. The use of SUN and Apollo workstations is also growing. The vast majority of microcomputers are IBM or IBM clone products, although there is a growing population of Apple products being used across campus. In fact, the vast majority of students choose Apple Macintosh computers when selecting a personal computer.

Penn's decentralized environment, with its mixture of computing hardware, has contributed to the need for the development of a standard communications protocol capable of interfacing between otherwise incompatible systems. While the OSI (Open Systems Interconnection) protocol being defined by the International Standards Organization is likely to be accepted as the eventual standard, realistically its adoption and implementation is at least five years away. At the present time TCP/IP, the standard for national networks, is being used. As national standards change, so must Pen's if the University is to continue supporting access to external networks. Internally, DECNET, although limited to VAX computers, is receiving greater use, especially as Digital's ALL-IN-1 office system product gains acceptance as the e-mail technology supported by the University.

Support Services: General

With the escalation of desktop computing in the early 1980's, the University realized that a support structure was needed to help faculty, students, and staff use the new technologies. A few schools within Penn had sophisticated computing centers, but many of these centers had a large system focus and invested heavily in hardware and software for this environment while ignoring the needs of the microcomputer users. Thus, microcomputer implementation and support had a rough beginning and the less computer literate individuals were not well served.

Partly in response to this, the University developed a Comprehensive Computing Plan which was issued in the Fall of 1983. Emerging from this plan were two offices under the Vice Provost for Computing which offered support to the entire University community. The first was the Computer Resource Center (CRC) which was to be the primary source of support for the end user. Over time the CRC has tested popular commercially available software packages for IBM and Apple microcomputers and offered a variety of levels of support for software packages that have been designated as officially supported by the University. These applications include word processing, spreadsheets, data base management, graphics, and utilities, to name a few.

In addition, the CRC has provided, within the limits of staff resources, consulting, information, and training services to the entire University community including office automation support, network support, and broad based as well as highly specialized end user support via their publication, Penn Printout, which appears as an insert to Almanac.

The second support unit arising from the Comprehensive Computing Plan was the Office of Data Communications and Computer Services (DCCS). The primary mission of this department is to design, install, and manage PennNet. DCCS is responsible for overseeing individual connections to PennNet. This includes arranging to have the necessary wiring run from offices to control boxes and giving advice on the more appropriate type of connection, Ethernet or asynchronous.
DCCS makes available to the University community a series of helpful publications and services related to communicating over PennNet. Some of the publications discuss how to get a PennNet connection and the costs involved, services available to PennNet subscribers and how to use them, and user manuals for communications technologies such as Digital Equipment Corp.'s ALL-IN-1. DCCS has also become the central notification and contact area for communications software upgrades that are utilized by PennNet. This assures that only compatible versions of software are used by the decentralized units of the University.

More recently a new support function has been added to the Vice Provost's area: Information Resource Planning and Data Administration. This group is charged with supporting the University's strategic planning process for information technology as well as defining standards for administrative data and information systems that assure their accuracy, integrity, timeliness, accessibility, and security.

In addition to these central support services for computing, various decentralized computing centers located across the University provide additional support. The type and depth of support offered varies as a result of other priorities within these centers.

Support Services: University Library System

The confederation of Penn libraries is a very important resource serving the entire Penn community. It is at the very hub of the University's information environment. As a system, it is the primary agency for the acquisition of information in both traditional and electronic formats, and, with the help of its support services, users can be trained in the use of a variety of electronic services. PennLIN, the electronic catalogue, currently maintains records on about 50% of the total collections and nearly 100% of the collections acquired after 1972. Access to PennLIN is available through terminals located throughout the Van Pelt Library as well as through other computers that are linked to PennNet. Supplements to PennLIN are the Research Libraries Information Network (RLIN) and the On-line Computer Library Center (OCLC). These are accessed through special terminals available in the Van Pelt Library and are used to locate books and serials within other research libraries.

Another valuable service provided by the Library system is data base searching of information. The use of both internal and external data bases are supported, including DOW JONES, BRS, ABI/INFORM, MEDLINE, as well as laser disk data bases acquired by the Library system. Access to these data bases is generally available to the entire University community and sometimes charges are levied to offset the cost of providing the service. The access policies, however, are sometimes restrictive, especially when the service provided is governed by a decentralized library unit.

Support Services: Wharton Computing and Instructional Technology

Wharton Computing and Instructional Technology (WCIT) is the support program for computing and instructional technologies offered by the Wharton School. This program is available to the entire Penn community, though often at a cost, and provides varied services to its clients with a focus on computing within the Wharton environment. WCIT offers training and support for a wide variety of software running on Wharton's large-system and microcomputers. In addition, WCIT maintains an audio-visual facility to support instruction.

Support Services: Other

The remaining three major academic computing facilities on campus are the SAS Computing Facility, the Medical School Computer Facility, and the Engineering Computer Facility. These facilities offer varying levels of support on high level computations, data base searches and manipulations and other services which address the research and instruction needs of faculty and students.

There are many other computer systems running on campus, but these systems tend to be restricted in use to departments, research groups, or other groups offering limited appeal to outside users. The support tends to be limited to the needs of specialized groups of users with variations in the quality and degree of support existing between centers. Some of these include:

1. Engineering Systems
   - ENIAC
   - MOORE
   - PENDER
   - CIS
   - GRASP
   - LINC
   - GRAPHICS
   - DSL

2. Arts and Sciences
   - Physics
   - Chemistry Department
   - Social Science Data Center
   - Center for Computer Analysis of Texts
   - Language Analysis Project
   - Center for Soviet & Eastern Studies

3. New Bolton Center (Veterinary School)

4. Annenberg School

5. Medical Related
   - Medical Informatics Group in Radiology
   - Medical Imaging Processing
   - HUPNET
   - Office of Information Resources

6. Law Research Laboratory

Relationship to Other Institutions

The committee examined networking and data communications at four universities: Carnegie-Mellon, Brown, SUNY-Binghamton, and University of Maryland. While it may not be appropriate from an academic standpoint to rank all of these institutions as Penn's peers, the approaches taken and accomplishments made by this group are highly illustrative of the directions being taken to satisfy the requirements for academic information exchange in complex computing environments. Details of these universities' reports can be found in Appendix I*.

Summary Comparisons

While many characteristics of the computing environment at these institutions may be similar to Penn's, there are differences as well. TCP/IP appears to be the data communications protocol of choice, at least for now, as it provides users with flexibility to connect to numerous national databases. This flexibility is of cardinal importance to research-oriented institutions. There seems to be a strong feeling that the eventual adoption of OSI is likely, but this will depend largely on the adoption by the national networks of OSI as the national standard for the major research-oriented computing facilities and data bases.

The integration of voice and data networks has been discussed by the other institutions. At this point, there is little evidence that this is a high priority. The largest drawback appears to be the cost of hardware, but there also seems to be a lack of interest in pursuing this direction.

A major topic of discussion was the mix of the kinds of cabling used to construct network backbones. In this regard, Penn, having chosen fiber optics as the network spine, has positioned itself ahead of some of its peers. Fiber optic cable as the backbone will make it easier and less costly for institutions to adapt new technology to their networks with the potential for greater speed, reliability and flexibility. Institutions which have constructed their backbones with broadband asynchronous wiring are now faced with a need to upgrade to fiber optics often at great expense.

A theme common to the institutions reviewed is the importance of transparent access to the diversity of data that is available over networks. Transparency refers to the ability to access multiple bases of data using

* On file in the Office of the Provost
a common protocol surmounting unique requirements or boundaries of each particular data base. Some institutions are farther along than Penn in developing this transparency, but the decentralized nature of academic computing at Penn only frustrates efforts to create a transparent environment. Due to the uniqueness of the information environments of major universities, it is unlikely that a commercial vendor would be able to satisfy this need, and the more advanced institutions have accepted that in-house development is the best route to success.

Fundamentally, the continuing fiscal support of networks were issues that tended to separate Penn from the group of comparable universities. Several of the universities funded centrally the wiring of the network spine as well as the wiring to individual workstations. What better way is there to encourage utilization of the network? The only cost to the user in many instances was the cost of adapting a particular workstation to enable it to connect to the wall box. Penn's policy has been to bring the spine to campus buildings at no cost, but the decision to wire individual connections remains decentralized usually based on available funds.

A second instance where Penn differs is in providing student access to the network. Some of the institutions provided connections to individual dorm rooms, while others have provided access via computing clusters spread over the campus and made available to everyone. At the present time, the dormitories at Penn are not wired for connections to the network. To the individual dorm room, to wire individual connections remains decentralized usually based on available funds.

The need for better technical support of the network was echoed by all institutions in our comparisons. Such support could come in various forms. At the highest level it could be used to insist that what happens in one computing center does not adversely impact the rest of the network. At the middle level the support would assure that messages are delivered in a timely way. Finally, at the lowest level it could be used to provide individual support to new users not familiar with how the network works. Without an adequate corps of highly trained technical staff, on-going support is difficult, and the adoption of new technologies becomes almost impossible. Furthermore, such a staff must take the lead role in assuring the reliability of the network. Without such reliability, there would be little rationale for a campus-wide network.

Penn is somewhat different from the institutions in its structure for overseeing its computing environment. Penn's Vice Provost for Computing responds to an academic constituency represented by the Provost and an administrative constituency represented by the Senior Vice President. Some of the institutions reviewed govern their computing environments at the central level, by an individual who reports directly to the administrative with little or no direct responsibility to the academic side. In those situations, academic needs tend to take second service to administrative needs. Those institutions which have been able to integrate successfully academic and administrative joint ventures have been the best served. Penn's organizational design should allow academic needs to be met optimally under a Vice Provost for Computing charged with that mission.

Meeting Future Information Needs: Systems and Library

Information Needs

The principle information needs of the faculty and students at Penn are dual: timely access to information of the highest quality and easy or transparent access to information wherever housed. Access as a theme can be restated as premises of an advanced academic information environment. The academic community must be able to access the information it needs in a timely fashion whether the information is housed locally or at a distance or is in electronic format or traditional format. The capacity for timely access is a legitimate end in itself.

A second premise for an advanced academic information environment is there must be access to information technology for (a) communication and (b) instruction. Communication has traditionally been provided by mail services, telephones and/or oral presentations in various academic settings. Electronic data communication has expanded the vehicles of communication using electronic mail for the exchange of text, manuscripts, graphics, and pictures.

The evolution of communications technology raises additional concerns. There are many faculty at Penn who frequently communicate electronically with their colleagues locally, nationally and internationally. This is typically accomplished via electronic mail using BITNET. While BITNET communication is adequate, central support of it and campus electronic communication of it is not. The major computing facilities on campus where BITNET is used should have support staff trained to ensure that all networks, BITNET, INTERNET, or DECNET for example, have adequate hardware and software resources. Other types of central support would include properly cataloged network phone books, properly maintained user interfaces to network facilities, assurances that the connections to the network are adequate to handle the message traffic, and support for faculty who need to properly use these facilities. The present emphasis on providing access, with the obvious, efforts must be made since many individuals find it more difficult to communicate within the University than to off-campus locations.

In a teaching context, the current technology can have a major impact on classroom instruction. There is a need for classrooms equipped with advanced audio-visual devices that will link computers with projection equipment. This capability should be extended to include the use of remote computers as well. In this way students will benefit by experiences which they have observed in real time versus those which otherwise could only have been studied from texts. Furthermore, laboratory simulations, lecture materials, and tools for computer-aided instruction are all potential beneficiaries of electronic technologies.

Appendix II is useful for a better understanding of computer usage by students and its potential impact on instruction; it contains a progress report on Computer Lab Use in College Residential Settings. This report was submitted by Dr. Pamela Freyd of the Graduate School of Education. It contains preliminary information on how students are using personal computers, and it gives insight into the level of students' expertise, attitudes toward computers and ways in which students interact with computers.

Audio-visual departments have often been looked upon to provide support for classroom instruction. With the rapid increase in instruction technology utilizing computers, many of these departments must reorganize and change the way they have traditionally done business. Specially trained support staff will be needed to set up and operate variety of hardware and software configurations. While slide and overhead projectors will continue to be needed, these lower-level technologies will not need the same level of investment and support personnel. For some academic disciplines, information is not always needed in alpha or numeric formats. Often images can convey more about a subject than words or numbers. It is technically possible to transmit video data, and the fiber optic backbone will accommodate this.

The third access premise that the committee has identified as a component in an advanced academic information environment is access to information processing tools. Information processing includes computations, text and image processing, and symbolic manipulations. Academics work with different classes of problems which have different computing requirements: microcomputers, intelligent workstations, mainframe computers, large computers, and super computers. The premise of access to information processing tools, simply stated, means that faculty, staff, and students at Penn increasingly require appropriate computer hardware, software, and transparent, standardized interconnectivity.

The information-using behavior of the faculty and students at Penn is changing and growing. PennNet opened the door to the host of computing centers and information data bases on campus as well as nation-wide. The fiber-optic backbone of PennNet allows the necessary interconnectivity among sites.

Because of this improved access by individuals, local data bases of information have been developed by Penn researchers and graduate students and there is increasingly the need to share this information between individuals and among groups. However, locally developed formats and policies and the lack of governing standards often prevent easy transfer. The ability to access and share data and information is coming more to the forefront as an issue as traditional disciplinary boundaries in research are crossed more and more often. Investigators will need to be able to access data easily in one system for manipulation in another without the need to know what is happening behind the scenes to permit the exchange.

The Vice Provost for Information Systems and Computing and the Vice Provost for Libraries play critical roles in shaping the information environment of the University. The next two sections summarize the planning processes being undertaken by each of these individuals.  

44  

ALMANAC SUPPLEMENT December 5, 1989  

(Working Group Recommendations begin on page 46)
Vice Provost for Information Systems and Computing Plan

From Strategic Directions for Information Systems and Computing at the University of Pennsylvania, by Ronald L. Arenson. The report, currently undergoing revisions, is to be published at a later date.

Introduction

The University of Pennsylvania must plan and manage its information—just as it must plan and manage its buildings, people and money. Computing is extraordinarily decentralized at Penn, with the schools providing a major share of the facilities and services. In this environment, the role of the Vice Provost for Information Systems and Computing is to lead and coordinate planning and management from the perspective of the university as a whole and to build infrastructure and a core of central services.

This document presents a vision and a set of objectives and strategies for information and computing into the 1990's. This version reflects feedback from many Penn constituencies. Additional suggestions are welcome.

Vision of the Future

Our planning is shaped by a vision of Penn in the 1990's that anticipates:

- **Enhanced personal productivity**, with appropriate information resources and computing tools, on campus and elsewhere, that are easy to use and readily available to faculty, students, researchers, and administrators.

- **Increased collaboration**, within and across disciplines, between students and faculty, and in administrative areas, for example as PennNet is enhanced by new information services, extended to dormitories, and interconnected to a more robust, world-wide academic network.

- **Invigorated teaching and learning**, with support for development and use of state-of-the-art presentations, demonstrations, simulations, and tutorials.

- **Excellence in research, scholarship, student services, patient care, and public service**, as Penn's ability to attract the best faculty, students, and staff is supported by our reputation for an outstanding yet cost-effective information infrastructure.

- **A cohesive university**, as an increasingly diverse population of undergraduates and graduate students, dormitory and off-campus residents, faculty, researchers, clinicians, and staff come to value Penn as more than the sum of its world-class parts. Campus-wide access to new information services and to an integrated administrative data encyclopedia will contribute in important ways to this cohesion.

Role of the Vice Provost for Information Systems and Computing

The mission of the Vice Provost for Information Systems and Computing is:

To support faculty, staff, and students in achieving their missions in education, research, service, and administration by planning and managing the university's computing and information systems environment.

In Penn's decentralized computing environment, this mission requires strong partnerships with schools, centers, and university libraries. The role of the VPISC is to coordinate planning and management from a university-wide perspective and to provide a versatile, powerful, and easy-to-use information and computing infrastructure. As this infrastructure is developed, the VPISC must see that policies and standards are created and enforced, which requires the many university constituencies to be part of the development and control processes.

Five-Year Objectives

The Office of the Vice Provost for Information Systems and Computing has set twelve objectives for the next five years. The five primary objectives are:

1. **Enhance access to scholarly information in partnership with university libraries.** Provide consistent, easy, fast access from the desktop computer to Penn and other universities' library catalogs and databases.

2. **Support instructional uses of computers, with incentives, training, equipment, networking, and software.**

3. **Provide students with information, network services, and computing tools.** Using the same tools available to faculty and researchers, students will become partners in the information environment.

4. **Provide administrators with the information and systems they need to do their jobs.** New systems and their underlying data structures will be designed from a university-wide perspective and will promote the integrated management of university resources.

The remaining seven objectives involve the creation of the infrastructure necessary to accomplish the primary objectives:

- **Facilitate, coordinate, and support all school and center computing activities.**

- **Expand and enhance the university network, PennNet, to connect more faculty, staff, and students to a world-wide network of colleagues, libraries, academic and administrative information databases, remote supercomputers, and experimental instruments.**

- **Establish an integrated, campus-wide architecture of selected hardware and software to enable cost-effective system development and data sharing among microcomputers, minicomputers, and mainframes.**

- **Provide a consistent, intuitive user interface to the selected hardware and software, to ensure easy access and use.**

- **Restructure the governance and management of that portion of Penn's information environment under the purview of the VPISC to be more widely representative and more responsive to Penn's computing community.**

- **Establish an accessible, widely-understood base of university data, identified and defined in a university data encyclopedia.**

- **Enhance user support services, including education, technical assistance, consulting, problem identification and resolution.**

Strategies

We have identified six primary strategies to achieve these goals:

- **Governance.** Create a new governance structure—a widely-representative, multi-level set of governing bodies for information management.

- **Organization.** Reorganize the Office of the Vice Provost for Information Systems and Computing to ensure leadership and advocacy for the major initiatives required by this plan.

- **Planning.** Establish a broad-based planning process that coordinates the information planning of the VPISC, the new governing bodies, the schools, centers, and libraries—and that serves as input to the budgeting process.

- **Partnerships.** Form partnerships—internally with schools, libraries, and centers and externally with other universities, industry, and government.

- **Funding.** Seek increased funding from government, vendors, foundations, and corporations, as well as from the university itself.

- **National recognition.** Encourage faculty, staff, and students to seek national recognition for excellence in the use and management of information systems and technology. This enhances Penn's opportunities for outside funding and partnerships.

We welcome your reactions and comments.
Vice Provost for Libraries* Plan

The full text is scheduled for publication at a future date.

In this era of rapidly changing technology, Penn has undertaken a systematic reconsideration of its capacity to provide access to academic information. Building on our current strengths in Libraries and Computing, the University must create a scholarly information environment of singular excellence. During the years ahead, the Library must perform several significant tasks: maintain and improve the print collection of books and journals to match present and future academic programs; take increasing advantage of electronic information resources needed by faculty and students; become available; work in close partnership with information systems and technology to expand access to and delivery of information on campus in an increasingly distributed environment; achieve optimum cost-benefit in departmental libraries; use available space to maximum efficiency; develop systems for optimal information storage, retrieval and dissemination; and strengthen links to other major research libraries and centers which will improve local access to materials held elsewhere.

The information environment of any research university is complex. A major purpose of a university is to discover, create and disseminate knowledge and information, and to provide faculty and student scholars with access to the largest possible range of knowledge and information resources available, both locally and distantly, in the whole range and variety of formats in which it is made available.

The mission of the University Library is, thus, to discover, create and disseminate knowledge and information, and to provide faculty and student scholars with access to the largest possible range of knowledge and information resources available, both locally and distantly, in the whole range and variety of formats in which it is made available.

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A major concern expressed by our faculty and supported by statistical data is that the University's level of acquisition of traditional information has fallen too low: that Penn needs to devote effort to

Recommendations of the Working Group

Academic Information Access Program

This minimum level of access, however, implies the need for auxiliary levels of support varying with individual faculty members. For those faculty whose offices are currently wired for access to PennNet, the incremental cost might be only activating the connection and paying network maintenance charges. Assuming that each faculty member with a connection will be able to work with communications networks and have easy timely access to knowledge and information will require some degree of support depending upon an individual faculty member's technological expertise and discipline.

In general, Penn's academic disciplines can be grouped into three major classifications in terms of their need to use technology to access knowledge or information: 1) the hard sciences, including engineering, math and other technical fields, 2) the humanities, and 3) the social sciences.

Finally, the Library must be a partner with the computing enterprise on campus to evolve an appropriate equilibrium between information, information systems, and technology. This will help guide the University in ways that will be cost effective when deciding on traditional information resources and electronically formatted information.

This partnership can be extended to include participation in infrastructure improvements within the electronic information environment at Penn. Consistent interfaces, as transparent as possible for the user, need to be constructed to enable users to discover and use information effortlessly through the structure of microcomputers being established for other purposes. As such, what is needed is a technological and networked infrastructure for electronic scholarship, uniting campus users through a common set of language and protocols and a minimum amount of logging off, logging on, complex key strokes, language variations, or idiosyncratic protocols.

A shared partnership between Computing and Libraries is important at a service level. For instance, the Library regularly offers instruction on searching for materials and about the use of materials in electronic formats. To this end, there will need to be classrooms designed for instruction in the use of electronic materials scattered throughout the Library. However, Library staff will continue to count on their colleagues in computer centers for advanced training and consulting at more advanced levels concerning the use of technology or the application of systems.

The Library has responsibility for obtaining and providing access to formal information, information that is "published" or "printed", while the Vice Provost for Information Systems and Computing has primary responsibility for other information resources, that is, scholarly work in progress, the creation of experimental or one-time information bases, administrative computing, classroom technology in support of teaching, etc. Where appropriate, the Library and the Vice Provost for Information Systems and Computing should share consulting and instruction resources.

3. timely access to quality knowledge and information in both traditional and electronic formats.
and behavioral sciences being scattered in between. The sciences will require distributed information access and rapid delivery, using an electronic infrastructure. The needs of some humanists will continue to look and work like a traditional library, but others will have a new electronic component for information access, electronic information delivery, text processing, and communication with colleagues around the world.

It is estimated that there are presently 1,350 faculty whose offices are not wired to PennNet and approximately 500 who are connected. The capital cost per faculty member of providing access would be about $650 for an asynchronous connection or $1,100 for an Ethernet connection. The respective monthly operating costs would be $13.50 and $14.50. Thus, the total cost of providing access would be $1.1 million if all 1,350 faculty were given asynchronous connections or $1.7 million for Ethernet connections.

For students, the Academic Information Access Program would guarantee convenient access to PennNet. This is not to say that each dorm room should be wired, but rather PennNet access areas should be developed that are convenient for students to use. Dormitories may be good locations, but the Van Pelt Library and possibly some of the satellite libraries may be good locations as well. In addition, providing additional call-in lines is viewed as essential to support students living in off-campus housing. At present there are 46 call-in lines.

There appears to be general consensus about the timeliness for the Academic Information Access Program. Due to the many disciplines represented at Penn, however, access to information can be interpreted differently by different groups. The committee shared a consensus about the urgency of forward progress to implement Penn's Academic Information Access Program, a program which in addition to the three requisites for minimum access to information, envisions ancillary goals or recommendations.

Other Goals and Recommendations

1. The communications network must continue to be centrally provided and maintained.
2. The Vice Provost for Information Systems and Computing should have a discretionary fund to which schools and departments could apply for funds that would permit their faculty to acquire a minimum level of access as defined in the Academic Information Access Program.
3. Acquisition of knowledge and information sources and access to Library catalogues should continue to be the responsibility of the central administration.
4. Computational needs differ school by school, hence they should continue to be met by schools. Where issues of interconnectivity are concerned, such as the exchange of data between computing centers at different schools, the Vice Provost for Information Systems and Computing should be a part of the resolution of problems.
5. Computer Aided Instruction (CAI) has not developed into what was envisioned ten years ago. Individual faculty members may have developed computer-aided instruction tools, but this number is small. The focus should be on bringing more faculty and students up to a level of competency where they feel comfortable using the new CAI technology. Where computer-aided instruction has been successfully implemented should be encouraged to continue in their efforts, and the Vice Provost for Information Systems & Computing should have some funds to support such development.
6. Support staff and consultants trained in effective network access for specialized information needs should be identified and assigned to schools and/or departments. In this case, funds have to be allocated specifically for this purpose with no options for alternative uses.
7. The acquisition of terminals, personal computers, etc., should be the responsibility of the department or individual. To accommodate those areas where funding for computing hardware has been limited traditionally, there must be areas of public access to computers, such as libraries or school computing centers. Library public areas should be supported centrally and school computing centers should be supported by school funds.
8. A policy statement should be developed to guide resource allocation decisions that support access to information costs. This policy should seek to optimize accessibility across the University.
9. The issues of access security are complex and require careful planning. The Office of the Vice Provost for Information Services and Computing should take responsibility for drafting a recommendation which addresses data security issues.
10. The design of new buildings or plans for renovating existing space should include installation of PennNet access ports. This recommendation is to include student buildings.
11. Real financial growth is needed to cover the escalating cost of information services to students.
12. Traditional information acquisition will require increases in funding, but at a slower rate of increase than electronic information and investments in the computing infrastructure.
13. An empirical study is needed of the present use of information and knowledge on campus, the use of information technology and computing on campus, and the attitudes or indications of need for information and computing resources in the future by faculty. The data will be useful in implementing and specifying the plan for the academic information environment at Penn.
14. Based on the particular focus of the patrons of each campus library, projections should be developed for each library's functional capability, and
15. The introduction of new technologies should occur as they become cost beneficial or meet demand, e.g., advanced computer networking and communication, optical text scanning, facsimile transmission, advanced rapid delivery and optical videodisc capabilities.

Conclusion

The plan for the academic information environment described in this report is ambitious. In order for Penn to remain competitive in the areas of faculty recruitment, student recruitment, and research development, however, Penn must set its information access sights high. An information environment which supports faculty and student needs for timely access to the highest quality information available is basic to the research and educational missions of the University.

The academic information environment envisioned in this report will require the endorsement by the faculty and administration of the following key concepts and recommendations:

1. Academic Information Access Program defining the minimum level of access to information guaranteed to faculty and students.
2. Continued central support of PennNet.
3. Elimination of barriers which prevent easy and quick movement from one computer resource to another.
4. Support of faculty interests in developing systems for computer-aided instruction.
5. Creation of a user support hierarchy which is responsive to the multiple levels of needs of the Penn community.

Finally, the members of this committee endorse the strategic and conceptual plans of the Vice Provost for Information Systems and Computing and the Vice Provost for Libraries. It is agreed that these individuals should be responsible for setting the standards for access relevant to their areas.

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